Opening Pathways to Employment through Nontraditional Geospatial Applications in Technical Education (OPEN-GATE)
Year 2 Annual Evaluation Report
DUE 1601552

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Evaluation Summary – Year One

This report was produced to accompany the Principal Investigator's annual report with a report cutoff date of May 31, 2018. As in Year 1, a formative report covering summer 2018 activities will be developed and submitted to the PI subsequent to Sept 30, 2018.

Project Overview – OPEN-GATE Measures of Success

The two over-arching goals of OPEN-GATE are:

1) Expanding access to education and training in geospatial technologies and

2) Increasing adoption of geospatial technologies statewide to support economic development and the growth of a spatially-enabled workforce.

Surveys of businesses across Arkansas indicate a need for a workforce with spatial skillsets rather than geospatial specialists, particularly in rural areas (which is most of Arkansas.) This project has been designed to address a void in geospatial education and training in Arkansas by building capacity in educators across an educational Continuum (K-12 through undergraduate, with a special focus on two-year Colleges.) Such capacity-building allows educators to integrate geospatial technologies into existing curricula to reinforce content as students develop relevant spatial skillsets that are directly applicable to their studies and marketable to future employers. The proposal lists specific objectives necessary to accomplish proposed goals and provided a general timeline for key events that supported these objectives, based on the semester of anticipated completion.

In order to achieve the overarching goals, OPEN-GATE has developed performance objectives that will result in:

1) Fostered partnerships and close collaboration between industry, educators, and students at all levels to define regionally specific skillsets, assess performance of new hires, and use this input to fine-tune educational offerings.

2) Establish ongoing outreach to organizations and industry statewide to promote geospatial technologies and build long-term support for project sustainability.

3) Articulate strategies for the development and expansion of geospatially-augmented curricula in existing degree programs at two-year institutions and

develop a system-wide structure for continuing education and certification in applied geospatial technologies.

4) Build capacity in geospatial technology education at two-year institutions.

5) Foster adoption of geospatial technologies at the secondary school level in support of STEM learning and the availability of local educational pathways at regional two-year colleges.

6) Provide ongoing support and resource development for two-year and secondary school institutions and employers.

Project Funding Period

The project commenced on July 15, 2016 and will conclude, with a proposed one year no cost extension, on June 30, 2020.

Evaluation Details

The project team and external evaluator will use the project logic model for formative and summative evaluation. The logic model will be used as a visual depiction of the project, as a communication tool, and as a road map for the evaluation. Inputs, processes, outputs, and outcomes will guide management of the project activities, outcomes, and products through formative and summative evaluation. Specifically, the logic model will be used to document and communicate:

1) The activities supported by the project. (*Activities*)

2) The tangible outputs generated from project activities. (*Outputs ~ Reach, Participation, and Reaction*)

    a. Who was reached? (who, how many)

    b. What were participants' reactions to activities?

    c. What is the quality/utility of the activities and products?

3) What project beneficiaries need to know and be able to do. (*Short-Term Outcomes ~ Learning*)

    a. How did the activities affect participants' knowledge, skills, abilities, or attitudes?

4) What should be done differently as a result of the project? (*Mid-Term Outcomes ~ Behavior*)

    a. To what extent did participants change their behavior because of what they learned?

    b. What would have/have not happened in the absence of the project?

5) How the long-term goals of the project align with the ATE program. (*Long-Term Outcomes ~ Results*)

    a. What is the cumulative effect of the project's outcomes?

    b. What aspects of the project are sustainable?

    c. What was transformative about the project?

Both quantitative and qualitative data will be collected and analyzed.

Evaluation Activities

Evaluation activities for this grant will achieve the following aims:

- Provide both quantitative and qualitative evaluation data;

- Focus on both results and process evaluation, including capture and documentation of unanticipated outcomes, along with unanticipated issues and their resolution;

- Report project progress relative to the original grant proposal and to previous progress; and,

- Measure project effectiveness and impact on the project's main target constituencies.

This plan includes both formative and summative evaluation activities. Formative evaluation will assess the impact of project resources, tools, and techniques at key intervals during the project, and advise the project team on where changes and amendments are warranted. Lessons learned and other evaluation findings will be shared with the greater STEM educational community and related science education organizations. Formative evaluation will also assess advancement in meeting project goals and on identifying, which activities are contributing to this progress, and it will also include a systematic attempt to assess unanticipated benefits and obstacles. The

formative evaluation process will also assess the impact of project activities and outcomes attainment.

A summative evaluation will focus on the overall project success in achieving its goals and objectives, along with generating positive and constructive outcomes including the consequences of unanticipated outcomes.

A key outcome will also be to determine what aspects or components of the project were most effective in motivating faculty to integrate geospatial technologies into existing curriculum and impact student learning and marketability to future employers.

Table 1: Cyclical evolution of research questions and data collection tools and methods in formative evaluation.

RESEARCH QUESTIONS	DATA COLLECTION TOOLS & METHODS
CYCLE ONE: Activities and interactions produce value in and of themselves, they can help answer questions, trigger out-of-the-box thinking, solve problems, and bring together Member Institutions.	
What are significant events?	Recording and tracking of curriculum modifications and modules, professional development, recruitment events, business and industry involvement by Member Institutions.
What is the level of participation?	Immediate end-of professional event and surveys, interviews with event attendees, six-month follow-up survey.
How much content is created?	Tracking of number of courses modified and degree program modification by secondary and post-secondary institutions (count.)
How relevant is the content?	Interviews with focus groups and survey results. Student recruitment and retention (count). Student graduation (count). Student internships and job placement (count). Student articulation to bachelor degree programs (count.)
With whom did the project interact with and make connections?	Interviews with participating faculty, administrators and business and industry representatives.
CYCLE TWO: Knowledge created in individuals and throughout the community is the creation of knowledge capital. Knowledge capital is a collective good distributed across a community or network.	
Is the knowledge capital of value to the member organizations?	Focus group with selected academic partners and survey instruments, growth in enrollments in involved classes.
Is the knowledge capital being used?	Focus group with selected academic partners and survey instruments as above.
CYCLE THREE: Knowledge capital is adapted and applied in different contexts by member institutions (secondary and postsecondary) and others.	

Is material from the project being used/re-used by members?	Observation and focus group with academic members and survey instruments, inventory of effected course curricula and content.
Are new initiatives being undertaken?	Focus group interviews, inventory of new courses utilizing OPEN-GATE materials.
Is learning being transferred within the project member institutions?	Focus group interviews- as above.
CYCLE FOUR: The use of resources, connections and practices from the project results in improvements in performance or new initiatives.	
Has performance within the field improved?	Focus group or individual interviews with industry personnel and representatives, exit and on-job interviews with graduates.
Is the project properly leveraging resources to gain more resources?	Tracking of number of courses developed and modified by member colleges.
Do members see community as worthwhile?	Tracking of number of people attending project events and professional development courses. Focus group interviews. Tracking student enrollment numbers (including gender, diversity, economic, adult students, and veterans) and dual enrollment. Tracking number of articulation agreements.
Are things being done "better" as a result of the project?	Focus group or individual interviews with industry personnel and faculty members.
Are knowledge products being created by project members as evidence of performance?	Tracking number of courses and modules created and focus group interviews.
Cycle Five: Social learning causes a reconsideration of the learning imperatives and the criteria by which they are defined. This involves sustainability and transforming or leaving behind existing structures and using new definitions to create a new framework for the community.	
Are there new frameworks for thinking about the technology domain?	Observation, focus group interviews, survey of Member Institutions and industry partners. Asking PIs to identify new discussions with Member Institutions personnel.
Are there institutional changes as a result of the project?	Focus group interviews, observations and interviews with school administrators.
Is there a new framework to guide the field?	Focus group interviews, observations and interviews with individuals from the geospatial and related fields.

Measures

The external evaluator will conduct evaluation activities in accordance with an evaluation activities timeline (Table 2) which parallels the project timeline.

Table 2: Evaluation Plan -- Planned Summary Timeline

Evaluation Task/Deliverable	Jul-Sep 16	Oct-Dec 16	Jan-Mar 17	Apr-Jun 17	Jul-Sep 17	Oct-Dec 17	Jan-Mar 18	Apr-Jun 18	Jul-Sep 18	Oct-Dec 18	Jan-Mar 19	Apr-Jun 19
Assist with formative evaluation.		X	X	X	X	X	X	X	X	X	X	X
Lead development of overall evaluation plan.	X	X										
Lead development of project-wide evaluation instruments as needed.		X	X	X	X	X	X	X	X	X	X	
Collect data on project activities.		X	X	X	X	X	X	X	X	X	X	X
Attend, participate in project meetings.	X	X	X	X	X	X	X	X	X	X	X	X
Work closely w/ PI's and staff; assess project effectiveness and impact.		X	X	X	X	X	X	X	X	X	X	X
Monitor evaluation progress.		X	X	X	X	X	X	X	X	X	X	X
Monitor project progress.		X	X	X	X	X	X	X	X	X	X	X
Provide evaluation results to key stakeholders and audiences as appropriate.		X	X	X	X	X	X	X	X	X	X	X
Lead summative evaluation.				X				X		X	X	
Lead preparation of annual evaluation reports for NSF.					X			X				X
Submit Final Report (by July 2019 or tbd.)												-->

Project Inputs, Activities, Outputs, Short and Long Term Outcomes

A logic model has been developed, in which inputs, processes, outputs, and outcomes are monitored and used to guide management of the project activities, outcomes, and products through formative and summative evaluation.
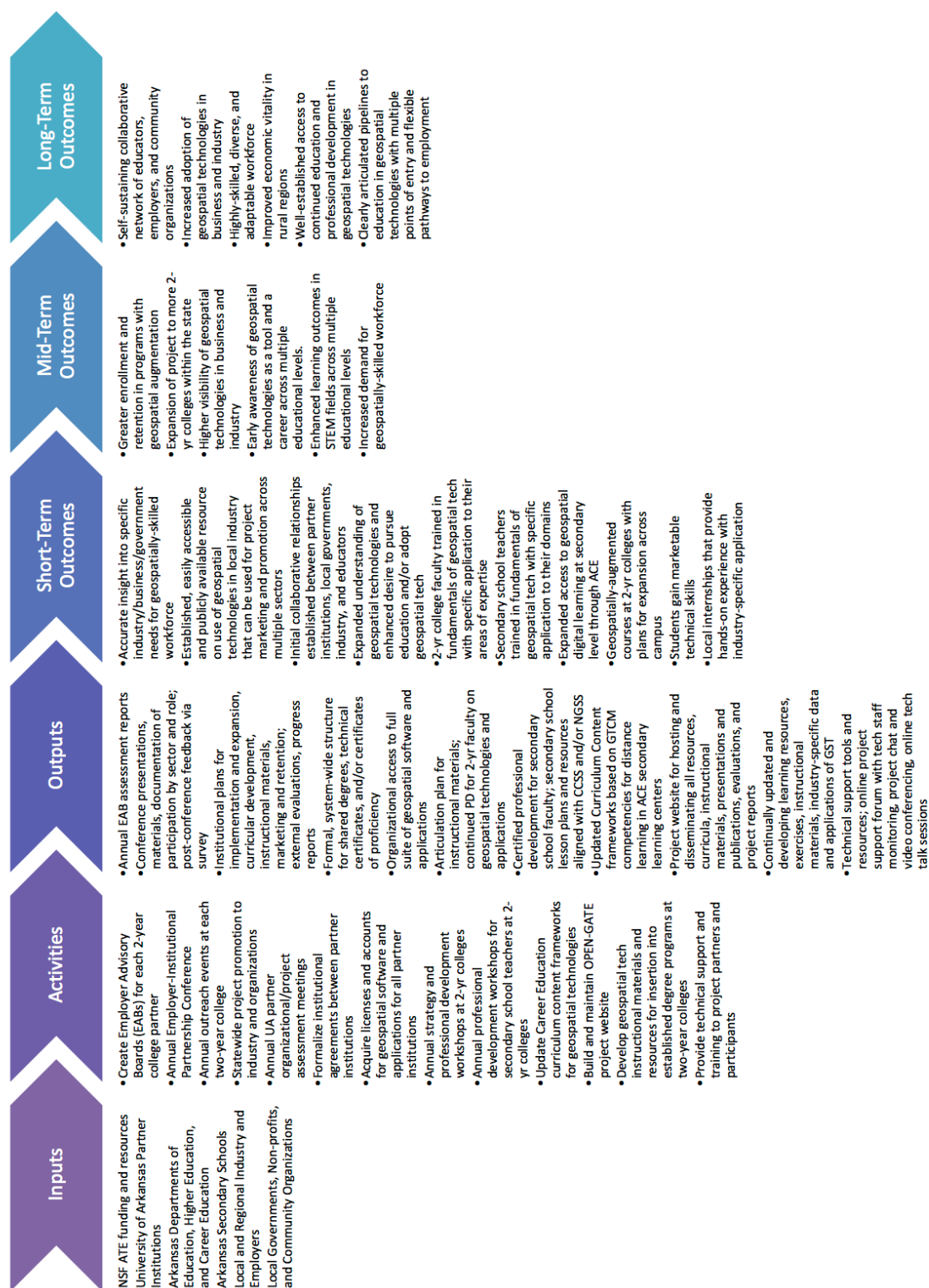
Inputs	Activities	Outputs	Short-Term Outcomes	Mid-Term Outcomes	Long-Term Outcomes
• NSF ATE funding and resources • University of Arkansas Partner Institutions • Arkansas Departments of Education, Higher Education, and Career Education • Arkansas Secondary Schools • Local and Regional Industry and Employers • Local Governments, Non-profits, and Community Organizations	• Create Employer Advisory Boards (EABs) for each 2-year college partner • Annual Employer-Institutional Partnership Conference • Annual outreach events at each two-year college • Statewide project promotion to industry and organizations • Annual UA partner organizational/project assessment meetings • Formalize institutional agreements between partner institutions • Acquire licenses and accounts for geospatial software and applications for all partner institutions • Annual strategy and professional development workshops at 2-yr colleges • Annual professional development workshops for secondary school teachers at 2-yr colleges • Update Career Education curriculum content frameworks for geospatial technologies • Build and maintain OPEN-GATE project website • Develop geospatial tech instructional materials and resources for insertion into established degree programs at two-year colleges • Provide technical support and training to project partners and participants	• Annual EAB assessment reports • Conference presentations, materials, documentation of participation by sector and role; post-conference feedback via survey • Institutional plans for implementation and expansion, curricular development, instructional materials, marketing and retention; external evaluations, progress reports • Formal, system-wide structure for shared degrees, technical certificates, and/or certificates of proficiency • Organizational access to full suite of geospatial software and applications • Articulation plan for instructional materials; continued PD for 2-yr faculty on geospatial technologies and applications • Certified professional development for secondary school faculty; secondary school lesson plans and resources aligned with CCSS and/or NGSS • Updated Curriculum Content frameworks based on GTCM competencies for distance learning in ACE secondary learning centers • Project website for hosting and disseminating all resources, curricula, instructional materials, presentations and publications, evaluations, and project reports • Continually updated and developing learning resources, exercises, instructional materials, industry-specific data and applications of GST • Technical support tools and resources; online project support forum with tech staff monitoring, project chat and video conferencing, online tech talk sessions	• Accurate insight into specific industry/business/government needs for geospatially-skilled workforce • Established, easily accessible and publicly available resource on use of geospatial technologies in local industry that can be used for project marketing and promotion across multiple sectors • Initial collaborative relationships established between partner institutions, local governments, industry, and educators • Expanded understanding of geospatial technologies and enhanced desire to pursue education and/or adopt geospatial tech • 2-yr college faculty trained in fundamentals of geospatial tech with specific application to their areas of expertise • Secondary school teachers trained in fundamentals of geospatial tech with specific application to their domains • Expanded access to geospatial digital learning at secondary level through ACE • Geospatially-augmented courses at 2-yr colleges with plans for expansion across campus • Students gain marketable technical skills • Local internships that provide hands-on experience with industry-specific application	• Greater enrollment and retention in programs with geospatial augmentation • Expansion of project to more 2-yr colleges within the state • Higher visibility of geospatial technologies in business and industry • Early awareness of geospatial technologies as a tool and a career across multiple educational levels. • Enhanced learning outcomes in STEM fields across multiple educational levels • Increased demand for geospatially-skilled workforce	• Self-sustaining collaborative network of educators, employers, and community organizations • Increased adoption of geospatial technologies in business and industry • Highly-skilled, diverse, and adaptable workforce • Improved economic vitality in rural regions • Well-established access to continued education and professional development in geospatial technologies • Clearly articulated pipelines to education in geospatial technologies with multiple points of entry and flexible pathways to employment

Figure 1: Logic model for formative and summative evaluation.

Results including Informal Feedback

Year two has continued to focus on expanding access to education and training in geospatial technologies. In this phase, objectives continue to support capacity-building and curriculum development at the secondary school and two-year college levels; coordination, collaboration, and information sharing among the partners; and initial outreach to communities of interest.

During year two the project accomplished the following under each goal:

Goal 1: Increase adoption of geospatial technologies in industry and government.

Objective 1.1 Foster partnerships and close collaboration between industry, educators, and students at all levels to define regionally- specific skillsets, assess performance of new hires, and use this input to fine-tune educational offerings.

Strategy 1.1.1 Create Employer Advisory Boards (EABs) at each two-year institution, composed of representatives of targeted industry (based on pilot degree program for geospatially-augmented instruction) and local business leaders (to raise visibility of geospatial applications locally).

This goal was revised to better leverage existing partnerships with local industry partners and the community colleges. Local industry partners already participate in community college guidance and activities often providing demonstrations and hands-on experience for students. In strategy session discussions with each community college in February 2018, partners agreed that in lieu of a formal report from the Employer Advisory Boards who often serve as volunteers, each community college would summarize the contributions of the Employer Advisory Board.

Strategy 1.1.2 Conduct one (1) Employer-Institutional Partnership Conference annually in Little Rock for industry, educators, and students to promote direct interaction and

collaboration.

The first OPENGATE partnership conference was hosted on September 15, 2017 at the Central Arkansas Library in Little Rock, Arkansas with an attendance of 24 that included 7 community college students. The second OPENGATE partnership conference is planned for November 2, 2018 to be held in Little Rock, Arkansas at a location to be determined. The focus of the 2018 conference will be to 1) highlight student accomplishments that have resulted from the Summer 2018 activities; and 2) showcase industry employment opportunities demonstrating how spatial thinking is utilized at every level of employment.

Strategy 1.1.3 Host one (1) Employer-Student outreach event at each partner institution annually, such as a GIS Day, to bring together local employers, GIS professionals, two-year college students, and local secondary school teachers and students.

Project staff have planned one outreach event at each community college location (four total) for Fall 2018. These events will take place on-site at each community college as a collaboratively hosted event that provides a one-day workshop to community college faculty, staff, and students providing an Intro to Spatial Thinking and WebGIS. Two additional events will be integrated at UACC Batesville and UACC Morrilton. At UACC Morrilton a spatial thinking presentation is planned for presentation during the "Career Explorations" summer program for 8th - 12th graders. At UACC Batesville a workshop and demonstration on soil science and spatial data is planned for presentation during the UACC Batesville K12 Agriculture Educators In-service.

Objective 1.2 Ongoing outreach to organizations and industry statewide to promote geospatial technologies and build long-term support for project sustainability.

Strategy 1.2.1 Identify and contact government entities, non-profits, professional organizations, and industry publications not currently identified as collaborators.

During year two, project staff had several opportunities to share information about the OPENGATE partnership grant at regional conferences; however, no formal presentations or papers were submitted. One partnership developing as a result of this grant is a partnership among the Arkansas Game and Fish Commission (AGFC) and the Cossatot Community College of the U of A.

Goal 2: Expand access to education and training in geospatial technologies at two-year institutions and secondary schools, articulating multiple points of entry and pathways to education and employment.

Objective 2.1 Articulate strategies for the development and expansion of geospatially-augmented curricula in existing degree programs at two-year institutions and develop a system-wide structure for continuing education and certification in applied geospatial technologies.

Strategy 2.1.1 Conduct one (1) in-person planning meeting in the first year, with teleconference follow-up, for administrators, educators, OPENGATE staff, and external advisor.

This deliverable was completed January 2017.

Strategy 2.1.2 Conduct project assessment meetings at each participating college annually for administrators, educators, OPEN-GATE staff, and external advisor.

Project assessment meetings were completed at each Community College during February and March 2018. These strategy sessions resulted in the completion of the Institutional Plans for each community college. They also served as opportunity to re-visit objectives and make changes to improve implementation and dissemination of knowledge and skills

targeted through the grant.

Strategy 2.1.3 Formalize agreements between partner institutions that clearly articulate pathways for continuing education and certification to eliminate administrative barriers to smooth student transition from program to program.

No significant progress to report on this item.

Objective 2.2 Build capacity in geospatial technology education at two-year institutions.

Strategy 2.2.1 Acquire licenses and accounts for geospatial software and applications for partner institutions.

Licenses and accounts were created for all community colleges during year 2. Each community college has identified at least one administrator to be the contact person for their ESRI organizational accounts. OPENGATE project staff have created reference materials and provided training to two of the four community colleges with the last two trainings planned for July 2018.

Strategy 2.2.2 Strategy and professional development workshops each year at partner institutions for campus champions and other interested faculty.

Year two saw the completion of the first round of professional development and training opportunities for community college faculty and instructors during Summer 2017, and more intensive trainings for both K12 educators and community college faculty and staff during Summer 2018. The chart titled, "OPENGATE Professional Development Registration by Location" shows the increase in participation at each location among the two years.

Objective 2.3 Foster adoption of geospatial technologies at the secondary school level in support of STEM learning and the availability of

local educational pathways at regional two-year colleges.

Strategy 2.3.1 Coordinate with the Arkansas Department of Education to build professional development workshops for secondary school educators.

Arkansas Department of Education-approved professional development content has been developed that allows participants to earn up to 18 PD hours in ADE FOCUS area 8.02.9 (Next generation learning/integrated technology) with a focus on applied geospatial technologies in the classroom to enhance curriculum content and reinforce student learning. Professional Development is approved under the following ADE Assurance Certification IDs: 2017-2018 (Summer 2017 PD) -Robyn Lane 5841051700000; 2017-2018 (Summer 2018 PD, before June 30 2018) - Hanna Ford 5263021800000; 2018-2019 (Summer 2018 PD, after June 30 2018) -Hanna Ford 5146051800000.

Strategy 2.3.2 Conduct four (4) week-long professional development workshops for secondary school educators annually (one at each two-year institution, led by campus champion with support from OPEN-GATE staff), that focuses on the use of ArcGIS Online to reinforce STEM content and illustrate real-world application of knowledge.

As a result of strategy sessions with community colleges and low enrollment in Summer 2017 professional development the professional development workshops were scaled back from 4-day to 3-day and training days were reduced from 8-hours per day to 6-hours per day. These modifications reduced the number of overall professional development hours offered to 18 hours; however, saw improved enrollment from K12 educators during Summer 2018 as indicated by increased enrollment. No lesson plans were submitted as a result of the Summer 2017 activities; however, Summer 2018 activities are seeing a

number of promising developments are connections with K12 educators that may result in submitted lesson plans and examples.

Strategy 2.3.3 Coordinate with the Arkansas Department of Career Education (ACE) to update existing curriculum content frameworks for geospatial technologies and increase utilization of curriculum through digital learning.

The GeoTech Center is in the process of updating the Geospatial Technology Competency Model (GTCM) which will help guide updates to the Arkansas Department of Career Education (ACE) to update existing curriculum content frameworks for geospatial technologies. The draft GTCM is expected to be released for comment by the GeoTech Center in July 2018.

Objective 2.4 Provide ongoing support and resource development for two-year and secondary school institutions and employers.

Strategy 2.4.1 Launch and maintain project website.

The project website has been completely redesigned with added resources and materials, events, and linkages to social media platforms. The re-designed site is easier to navigate and improved the ease of registration for trainings and workshops: https://opengate.cast.uark.edu

Strategy 2.4.2 Ongoing development of instructional materials and resources for insertion into existing courses in established degree programs by campus champions and OPENGATE staff.

During year two, the Institutional Plan was used to outline the implementation plan for each community college targeting at least one course in which spatial activities could be integrated during Fall 2018. The targeted developments for Fall 2018 and Spring 2019 are listed in the attachment, "OPENGATE CC Module Development Summary." These

modules have been designed and developed in collaboration with community college instructors and faculty at each institution to include specific fields and training materials that complement their courses and syllabi.

        Strategy 2.4.3 Provide technical support as needed by partners and participants in the project.

Support is ongoing.

Preliminary results from a post-workshop survey of the 2018 professional development participants has helped to modify training as staff moves forward to better communicate spatial concepts and opportunities for integration into existing curriculum.

Summer 2017 Professional Development Workshop

Opening Pathways to Employment through Nontraditional Geospatial Applications in Technical Education (OPEN-GATE) is a National Science Foundation-funded collaboration among four community colleges in the University of Arkansas system and the University of Arkansas-Fayetteville that will enable the development of a workforce with job-specific geospatial skills for local industry and government.

Regional surveys have shown a strong interest among employers for employees with skills in location-based services and other geospatial technologies as well as their industry-specific skills. OPEN-GATE is developing geospatial technology skill sets in targeted business sectors and emerging industries by augmenting existing programs of study at five two-year institutions:

- Cossatot Community College of the University of Arkansas
- Phillips Community College of the University of Arkansas
- University of Arkansas Community College at Batesville
- University of Arkansas Community College at Morrilton
- University of Arkansas, Fayetteville Campus (Summer 2017 only)

Summer workshops at each location have been designed to leverage educational materials developed by the GeoTech Center, an NSF ATE-funded center, as well as online content already developed by the University of Arkansas. Workshop participants were surveyed at the end of each workshop.

The summer 2017 workshop participants were comprised of eight (8) females, and four (4) males. Twelve (12) participants identified themselves as K-12 educators and one (1) identified themselves as a community partner.

During the summer 2018 of the OPENGATE project multiple opportunities for professional development and training were provided. During this period, two specific types of opportunities were provided: 1) professional development opportunities for K12 educators; and, 2) training for community college faculty and instructors.

Professional Development for K12 Educators x 4 workshops, 24 participants
June 4-6, 2018 at UACC Batesville - 9 K12 educators
June 11-13, 2018 at UACC Morrilton - 10 K12 educators
June 20-22, 2018 at Cossatot CC UA - 7 K12 educators
July 11-13, 2018 at Phillips CC UA - 9 K12 educators*
*Professional Development Workshops were planned for the following days and enrollments are accurate as of June 18, 2018.

Training for Community College Faculty and Instructors x 4 workshops, 5 participants
June 7-8, 2018 at UA CC Batesville - 4 UACCB Faculty and Instructors
June 18-19, 2018 at Cossatot CC UA - 1 CCCUA Faculty
July 19-20*, 2018 at Phillips CC UA - TBD Faculty and Instructors
July 30-31**, 2018 at UA CC Morrilton - TBD Faculty and Instructors

In late July, Phillips CCUA and UACC Morrilton requested that their workshops be postponed to better accommodate faculty workshops. The new training dates are August 6 and 7, 2018 for UACC Morrilton and September 27 and 28, 2018 for Phillips

CCUA. A formative Summer 2018 Professional Development Evaluation report will be completed in October 2018 after all 2018 training is complete.

Summer 2017 Professional Development Workshop – Evaluator Notes
Overall summer 2017 attendees believe that they had gained in knowledge from the workshop. A majority of the teachers said that they would be able to apply this content in their courses and felt that the level of the content would be appropriate for their students. Most would recommend this workshop to others.

Responses from attendees from 2017 Professional Development Workshops are found in Appendix A.

Summer 2018 Professional Development Workshop – Evaluator Notes
Not all colleges have completed the workshop at the time of this report. Preliminary results, from those colleges that have completed, are provided in the report appendices. Complete results will be presented in an October 2018 follow-up evaluation report.

Responses from attendees from 2018 Professional Development Workshops are found in Appendix B.

Recommendations
The following are personnel that have left (or are leaving the project): Dana Strassle (Summer 2017), U of A Community College Morrilton; Robyn Lane (March 2018), U of A Fayetteville; Linda Jaramillo (June 2018), U of A Community College Morrilton; and Matt Critcher, U of A Community College Batesville (July 2018). While each transition has brought temporary delay, staff has continued to make progress at each location.
Of special consideration is PI Dr. Tamara Griffin who is currently on catastrophic leave at U of A Community College Batesville due to unforeseen health issues; however, the team in place at UACCB has been dedicated to continuing to make progress in her absence.

There were some delays with the project team that were addressed over the past year. The initial PI has left for a new position and has been replaced. Both the initial and new PI have done an excellent job bringing both U of A Community College Morrilton and Phillips Community College of the U of A on track over the past year. Project personnel on each campus are in place and Summer 2018 Workshop data is being collected.

The PIs intend to apply for a no-cost extension for this project to allow for additional time to implement spatially augmented learning modules at community colleges. Due to several changes in personnel dedicated to the project the project is behind the project schedule for both deliverables and expenditures. The one year extension will allow time to complete all proposed goals and objectives.

Over the next year, the evaluator will work with PI's to:

- Record and track curriculum modifications and modules, professional development, recruitment events and business and industry involvement by Member Institutions.
- Survey professional development events
- Track the number of courses modified and degree program modifications by secondary and post-secondary institutions.
- Track the following
    - Student recruitment and retention (count).
    - Student graduation (count).
    - Student internships and job placement (count).
    - Student articulation to bachelor degree programs (count.)
- Interview participating faculty, administrators and business and industry representatives regarding new courses and curriculum.
- Monitor and report growth in enrollments in involved classes.
- Track the number of people attending project events and professional development courses.

- Conduct focus group and/or individual interviews with industry personnel and representatives, exit and on-job interviews with graduates.

Summary

As of June 2018, the formative elements of the project are in-place, As stated earlier and due to several changes in personnel dedicated to the project, the project is behind schedule for both deliverables and expenditures. New project staff are in place and doing an excellent job aligning project work with the proposed goals and objectives. Of particular note are the efforts of new PI Ford who is focused and has come up to speed quickly. A one-year extension will allow time to complete all proposed goals and objectives.

A more complete analysis of impact data that includes Summer 2018 Workshop results will be presented in an October 2018 follow-up evaluation report.
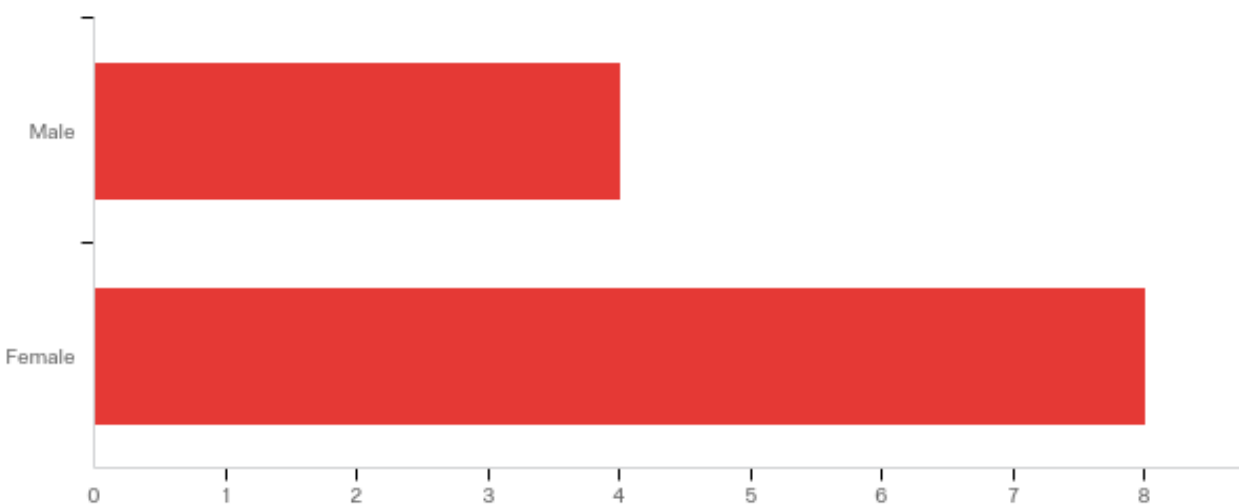
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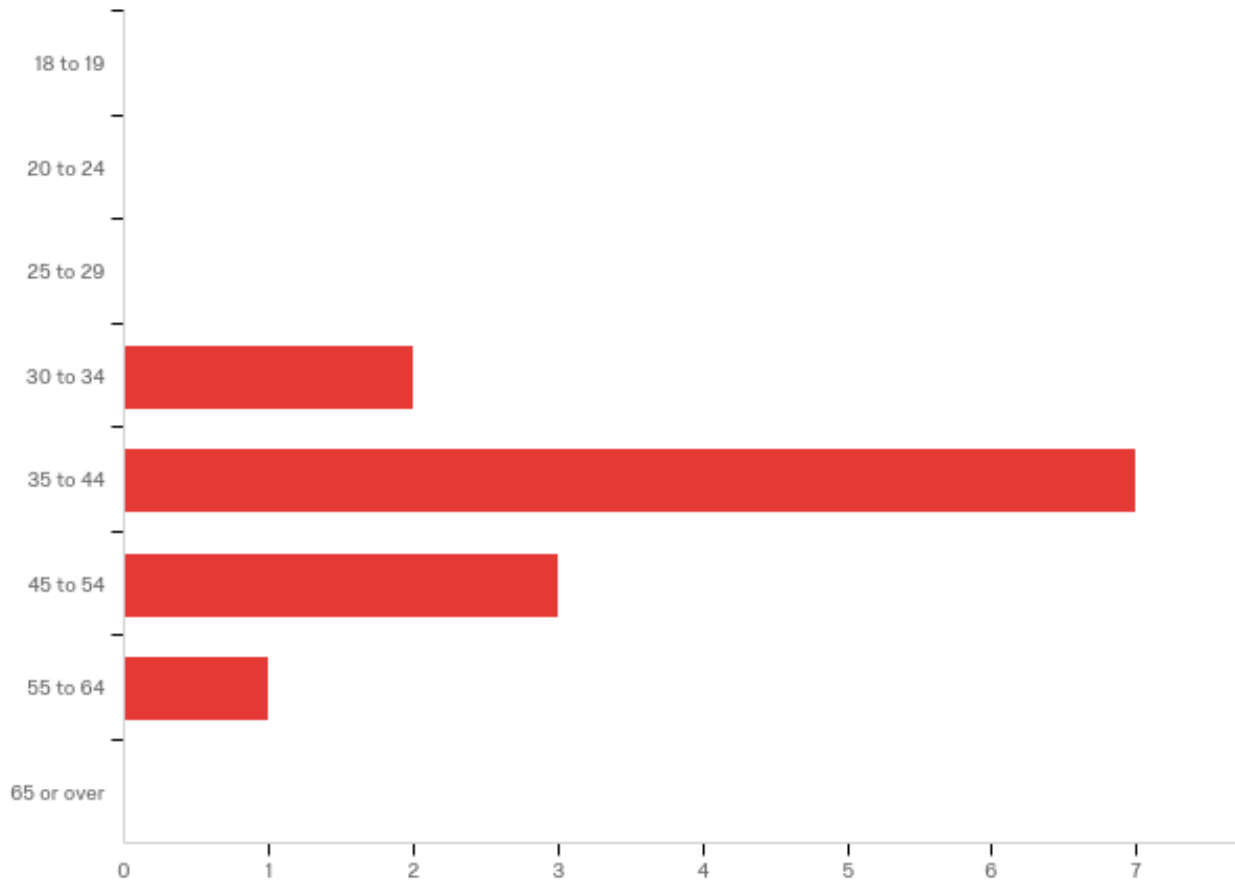
Appendix A

2017 Post Workshop Survey Responses

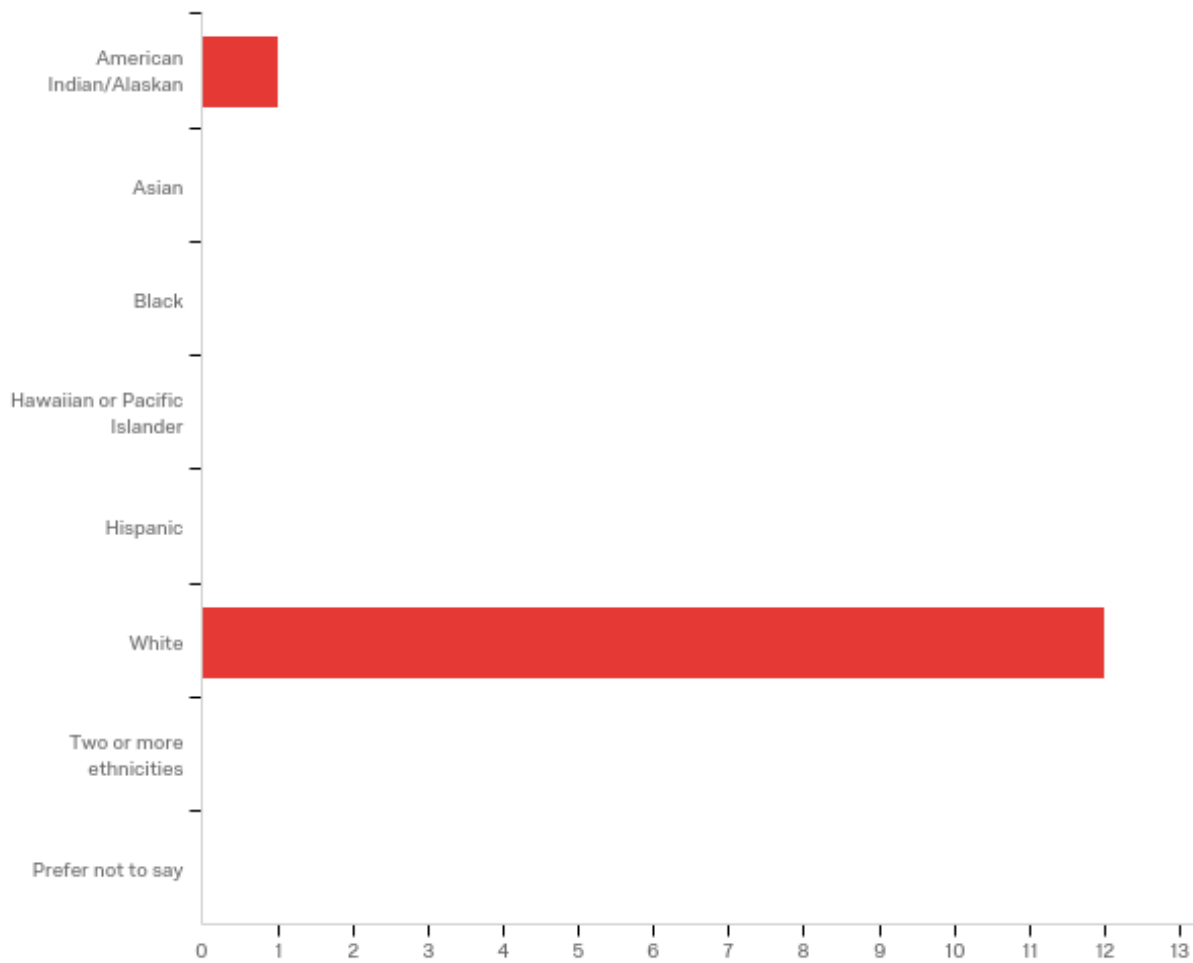*2017 Professional Development Series*

Q3 - I am...

#	Answer	%	Count
1	Male	33.33%	4
2	Female	66.67%	8
	Total	100%	12

Q5 - What is your age?

#	Answer	%	Count
1	18 to 19	0.00%	0
2	20 to 24	0.00%	0
3	25 to 29	0.00%	0
4	30 to 34	15.38%	2
5	35 to 44	53.85%	7
6	45 to 54	23.08%	3
7	55 to 64	7.69%	1
8	65 or over	0.00%	0
	Total	100%	13

Q7 - What is your ethnicity?

#	Answer	%	Count
1	American Indian/Alaskan	7.69%	1
2	Asian	0.00%	0
3	Black	0.00%	0
4	Hawaiian or Pacific Islander	0.00%	0
5	Hispanic	0.00%	0
6	White	92.31%	12
7	Two or more ethnicities	0.00%	0
8	Prefer not to say	0.00%	0
	Total	100%	13

Q9 - I am...
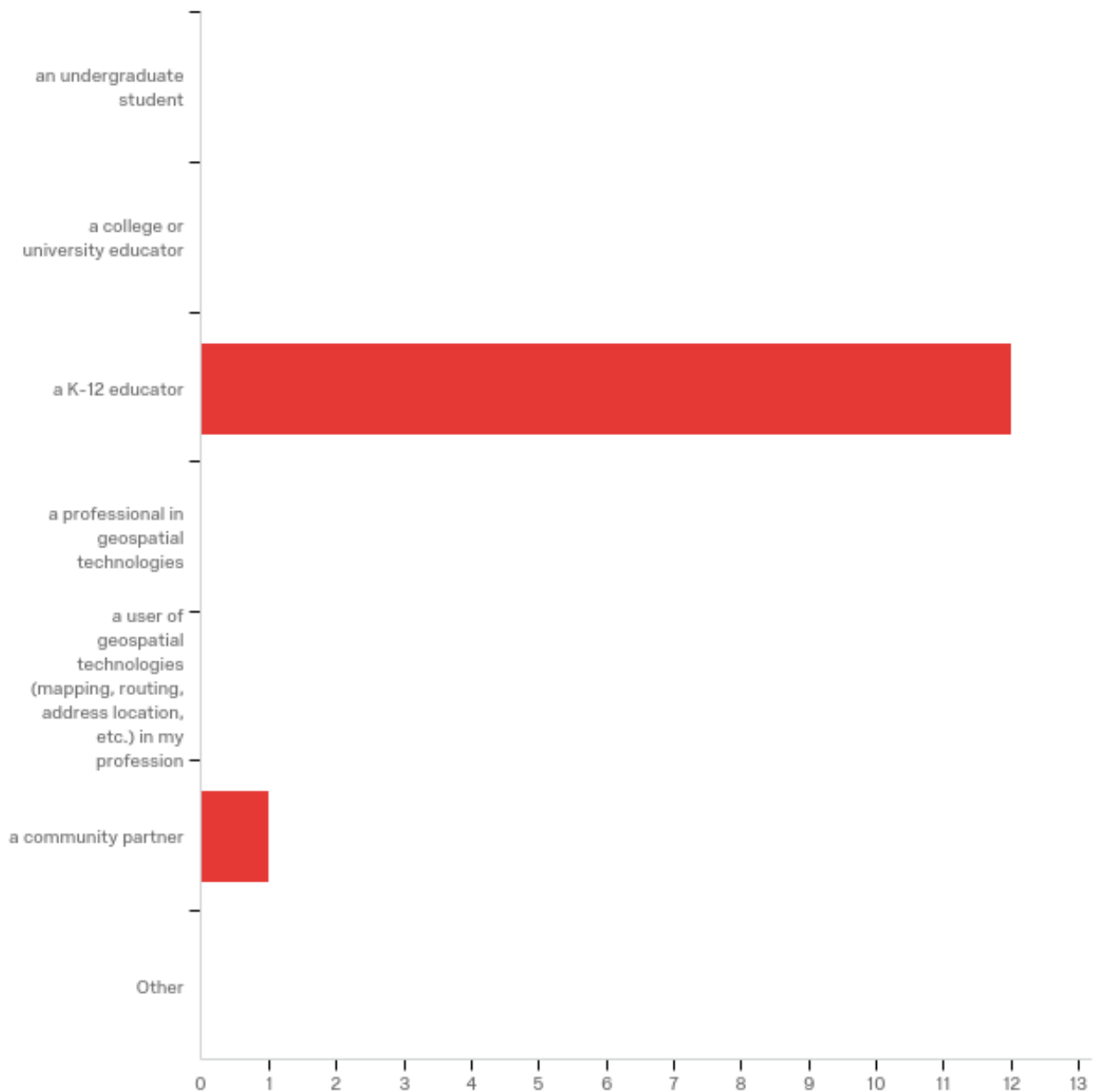
#	Answer	%	Count
1	an undergraduate student	0.00%	0
2	a college or university educator	0.00%	0
3	a K-12 educator	92.31%	12
4	a professional in geospatial technologies	0.00%	0

5	a user of geospatial technologies (mapping, routing, address location, etc.) in my profession	0.00%	0
6	a community partner	7.69%	1
7	Other	0.00%	0
	Total	100%	13

Other
Other - Text

Q11 - How many years have you been employed as an educator?
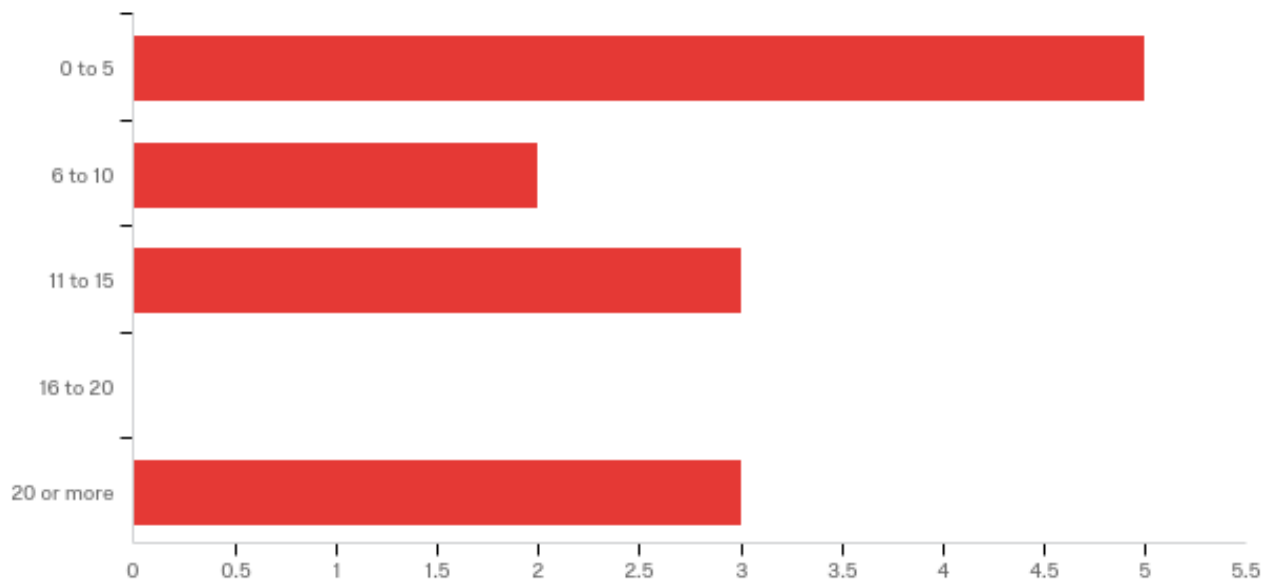
#	Answer	%	Count
1	0 to 5	38.46%	5
2	6 to 10	15.38%	2
3	11 to 15	23.08%	3
4	16 to 20	0.00%	0
5	20 or more	23.08%	3
	Total	100%	13

Q13 - In what content area do you teach?
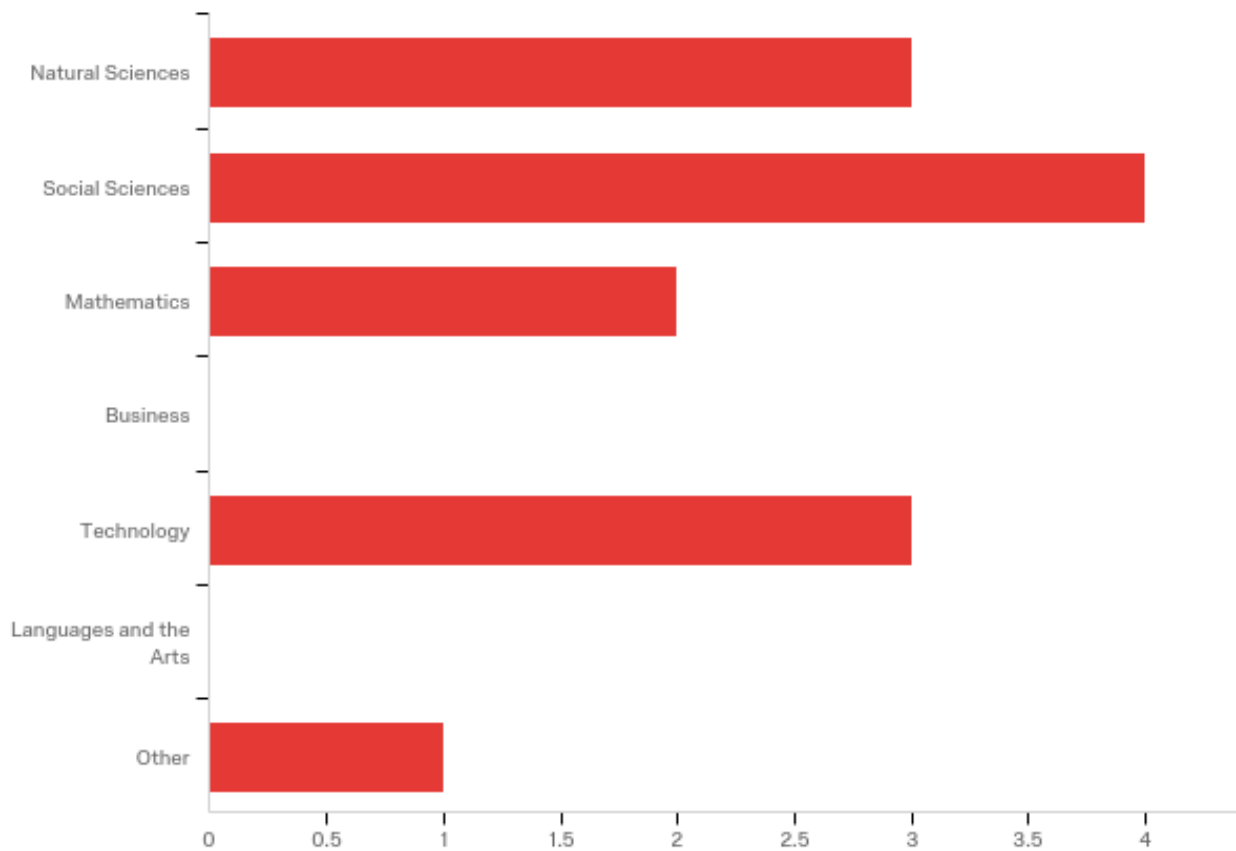
#	Answer	%	Count
1	Natural Sciences	23.08%	3
2	Social Sciences	30.77%	4
3	Mathematics	15.38%	2
4	Business	0.00%	0
5	Technology	23.08%	3
6	Languages and the Arts	0.00%	0
7	Other	7.69%	1
	Total	100%	13

Other
Other - Text

Q15 - Please estimate the combined student gender breakdown for the classes in which the workshop content will be used.

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Male	25.00	60.00	46.62	8.21	67.47	13
2	Female	40.00	501.00	88.08	119.48	14275.30	13

Q17 - Please estimate the combined student racial breakdown for the classes in which the workshop content will be used.

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	American Indian or Alaska Native	0.00	6.00	0.77	1.58	2.49	13
2	Asian	0.00	3.00	0.92	1.21	1.46	13
3	Black or African American	0.00	91.00	16.00	24.76	613.23	13
4	Native Hawaiian or other Pacific Islander	0.00	15.00	3.46	6.32	39.94	13
5	White or Caucasian	8.00	98.00	73.31	24.99	624.67	13

Q51 - What is the name of the course in which you are enrolled?

What is the name of the course in which you are enrolled?

EAST

Mapping across the curriculum

Mapping across the curriculum

Mapping across the Curriculum

opengate

Opengate

OPENGATE

OPENGATE

Open Gate

Mapping Accross the Curriculum

Mapping Across the Curriculum

Q47 - Where are you taking this course or professional development workshop?
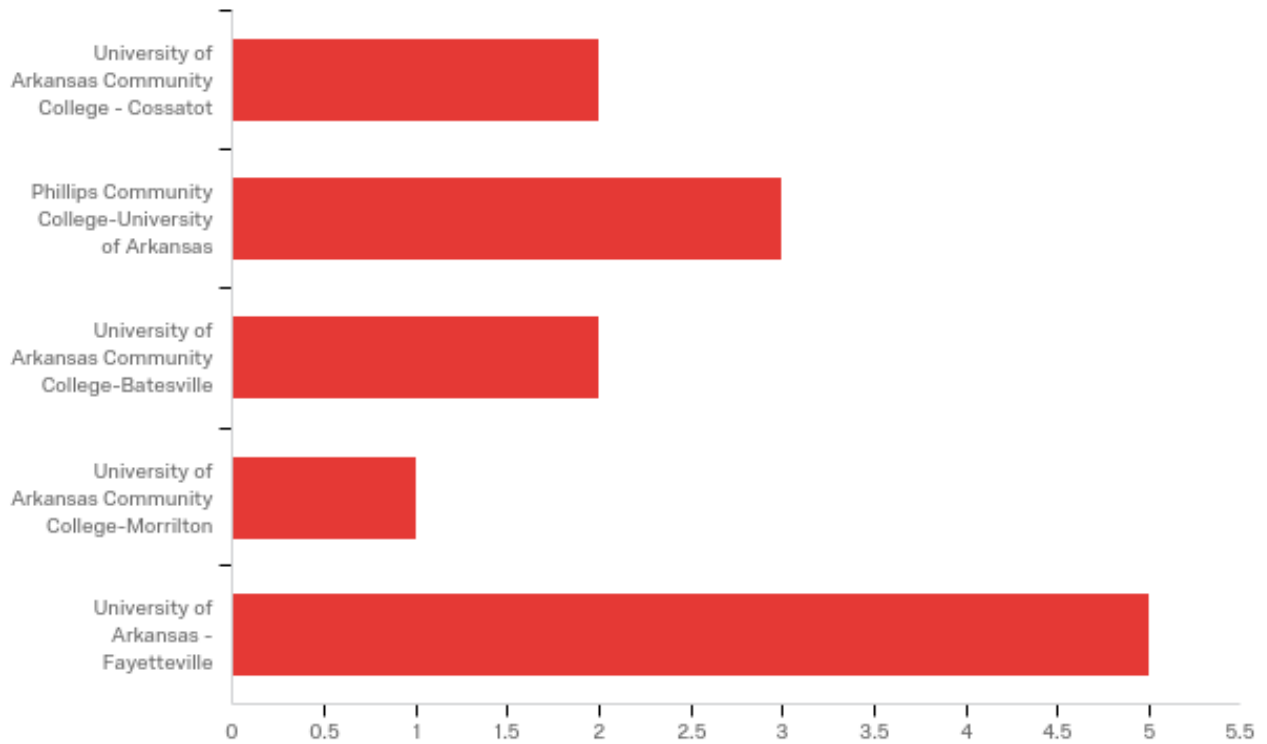
#	Answer	%	Count
1	University of Arkansas Community College - Cossatot	15.38%	2
2	Phillips Community College-University of Arkansas	23.08%	3
3	University of Arkansas Community College-Batesville	15.38%	2
4	University of Arkansas Community College-Morrilton	7.69%	1
5	University of Arkansas - Fayetteville	38.46%	5
	Total	100%	13

Q35 - How would you rate the overall quality of this...
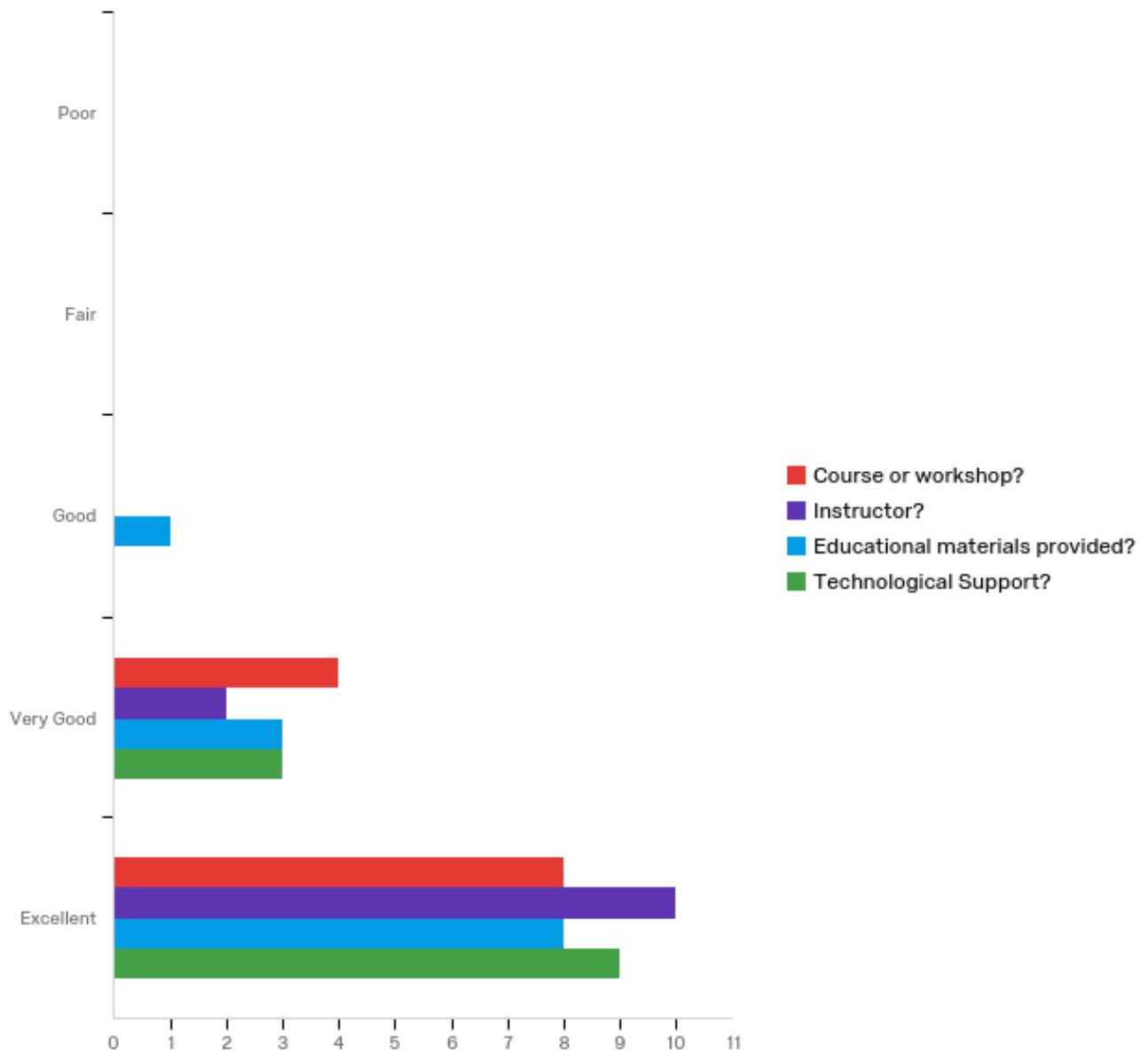
#	Question	Poor		Fair		Good		Very Good		Excellent		Total
1	Course or workshop?	0.00%	0	0.00%	0	0.00%	0	33.33%	4	66.67%	8	12
2	Instructor?	0.00%	0	0.00%	0	0.00%	0	16.67%	2	83.33%	10	12
3	Educational materials provided?	0.00%	0	0.00%	0	8.33%	1	25.00%	3	66.67%	8	12
4	Technological Support?	0.00%	0	0.00%	0	0.00%	0	25.00%	3	75.00%	9	12

Q19 - Please rate the professional development seminar facilities in terms of...

Legend:
- Overall quality
- Event venue (location,ease of access, parking)
- Event facilities (meeting rooms, internet access, other required technologi...
- Event staff
- Meals and snacks
- Opportunities for formal and informal networking
- Opportunities for education and training
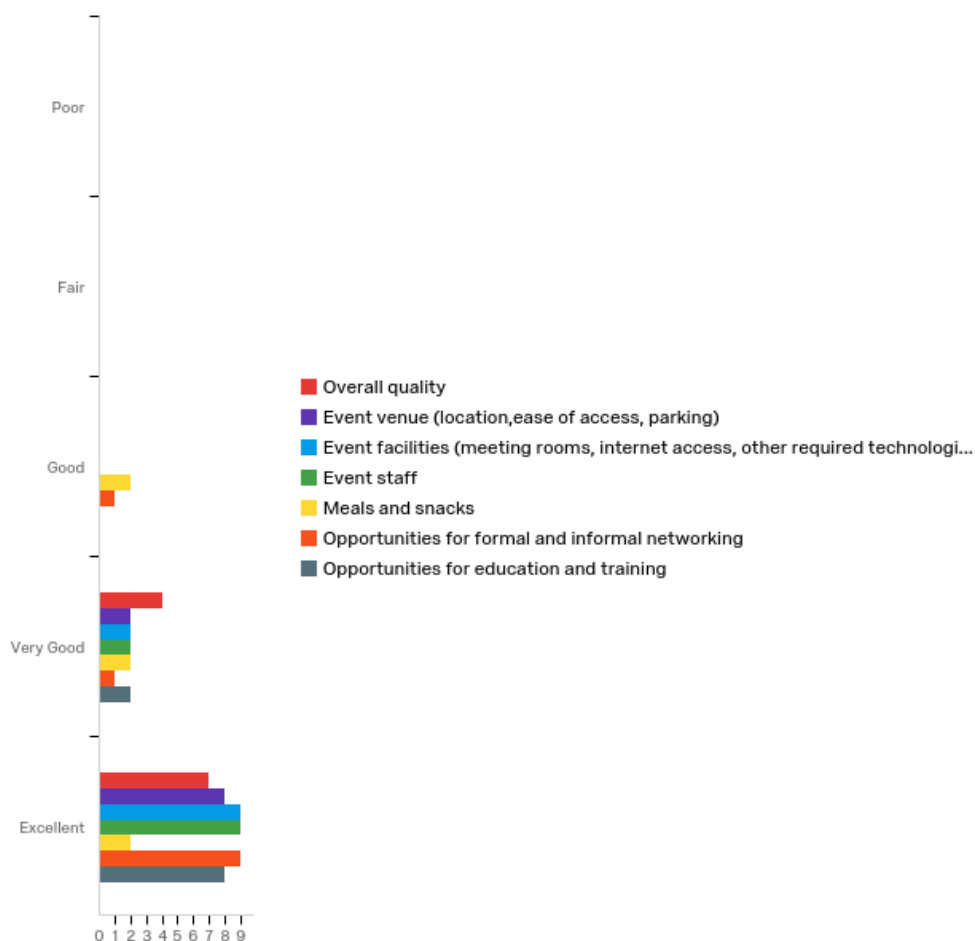
#	Question	Poor		Fair		Good		Very Good		Excellent		Total
1	Overall quality	0.00%	0	0.00%	0	0.00%	0	36.36%	4	63.64%	7	11
2	Event venue (location, ease of access, parking)	0.00%	0	0.00%	0	0.00%	0	20.00%	2	80.00%	8	10
3	Event facilities (meeting rooms, internet access, other required technologies or amenities)	0.00%	0	0.00%	0	0.00%	0	18.18%	2	81.82%	9	11
4	Event staff	0.00%	0	0.00%	0	0.00%	0	18.18%	2	81.82%	9	11
5	Meals and snacks	0.00%	0	0.00%	0	33.33%	2	33.33%	2	33.33%	2	6
6	Opportunities for formal and informal networking	0.00%	0	0.00%	0	9.09%	1	9.09%	1	81.82%	9	11
7	Opportunities for education and training	0.00%	0	0.00%	0	0.00%	0	20.00%	2	80.00%	8	10

Q21 - Please rate professional development seminar content and materials in terms of the following...

Legend:
- Overall quality
- Value of the topic
- Relevance of the information presented
- Expertise of the speaker or presenter
- Time allocated to technological training
- Time allocated to pedagogical and/or practical application of technology
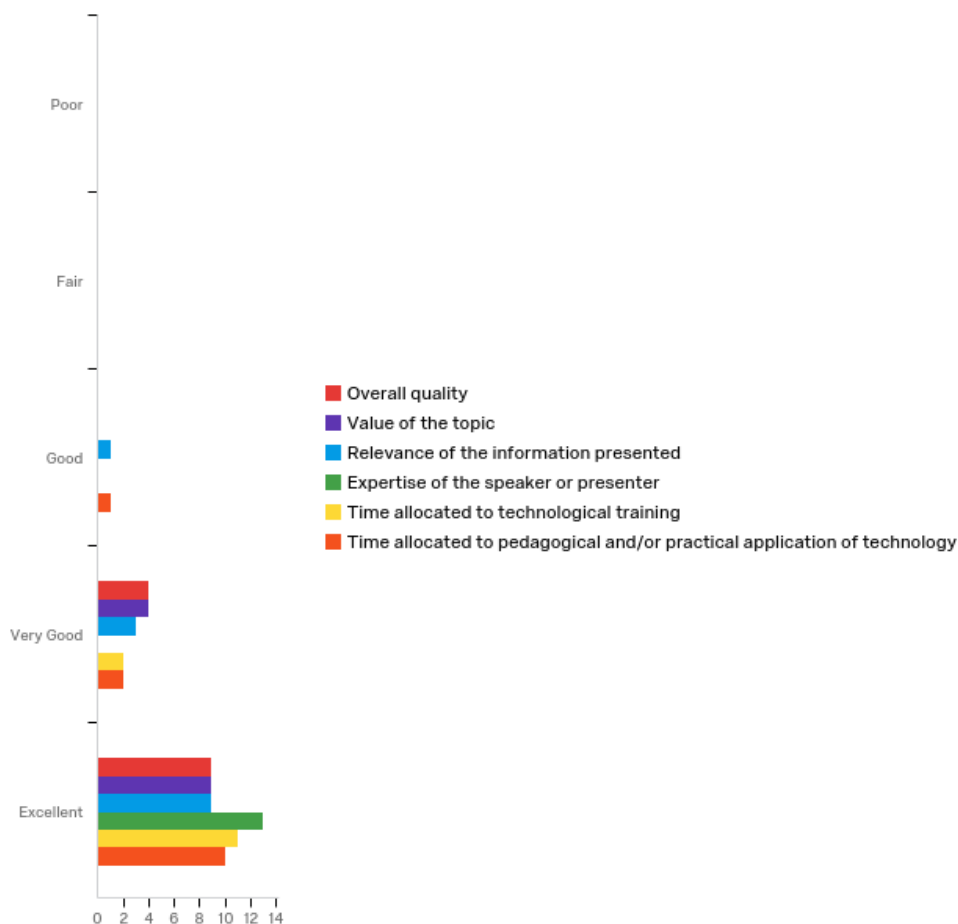
#	Question	Poor		Fair		Good		Very Good		Excellent	
1	Overall quality	0.00%	0	0.00%	0	0.00%	0	26.67%	4	14.75%	9
2	Value of the topic	0.00%	0	0.00%	0	0.00%	0	26.67%	4	14.75%	9
3	Relevance of the information presented	0.00%	0	0.00%	0	50.00%	1	20.00%	3	14.75%	9
4	Expertise of the speaker or presenter	0.00%	0	0.00%	0	0.00%	0	0.00%	0	21.31%	13
5	Time allocated to technological training	0.00%	0	0.00%	0	0.00%	0	13.33%	2	18.03%	11
6	Time allocated to pedagogical and/or practical application of technology	0.00%	0	0.00%	0	50.00%	1	13.33%	2	16.39%	10
	Total	Total	0	Total	0	Total	2	Total	15	Total	61

Q61 - What is the extent of your previous education in geospatial technologies?
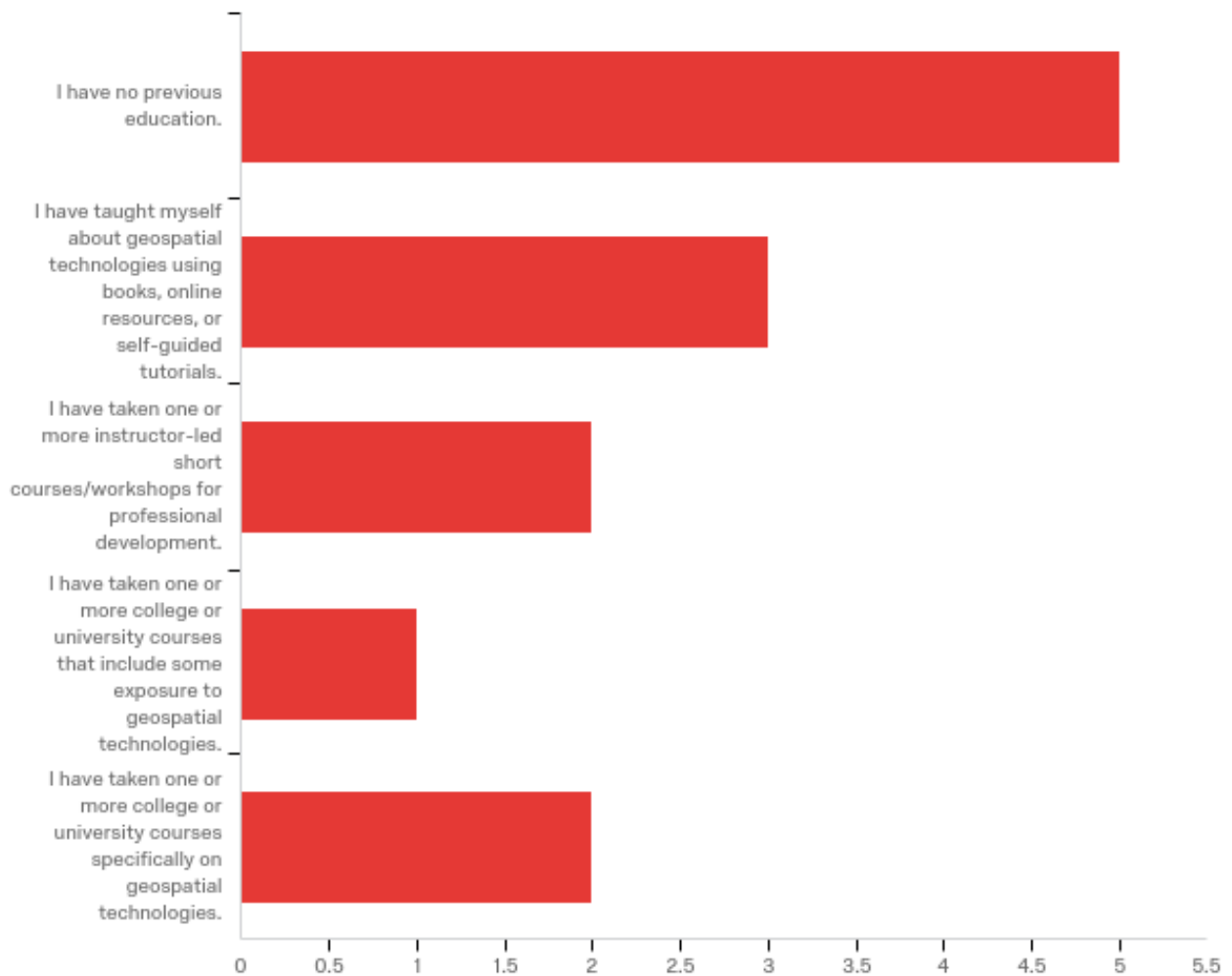
#	Answer	%	Count
1	I have no previous education.	38.46%	5
2	I have taught myself about geospatial technologies using books, online resources, or self-guided tutorials.	23.08%	3
3	I have taken one or more instructor-led short courses/workshops for professional development.	15.38%	2
4	I have taken one or more college or university courses that include some exposure to geospatial technologies.	7.69%	1
5	I have taken one or more college or university courses specifically on geospatial technologies.	15.38%	2
	Total	100%	13

Q63 - What is your experience with geospatial technologies in your content area, area of expertise, or related fields of employment?
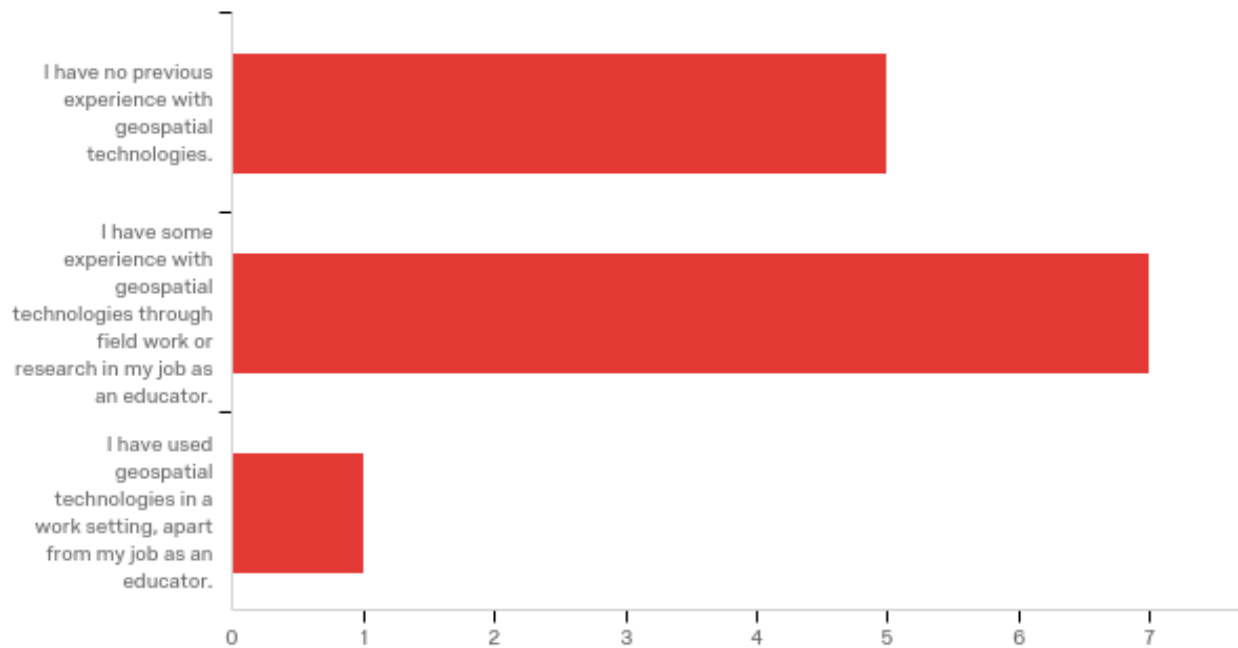
#	Answer	%	Count
1	I have no previous experience with geospatial technologies.	38.46%	5
2	I have some experience with geospatial technologies through field work or research in my job as an educator.	53.85%	7
3	I have used geospatial technologies in a work setting, apart from my job as an educator.	7.69%	1
	Total	100%	13

Q37 - Please respond to the following statements.
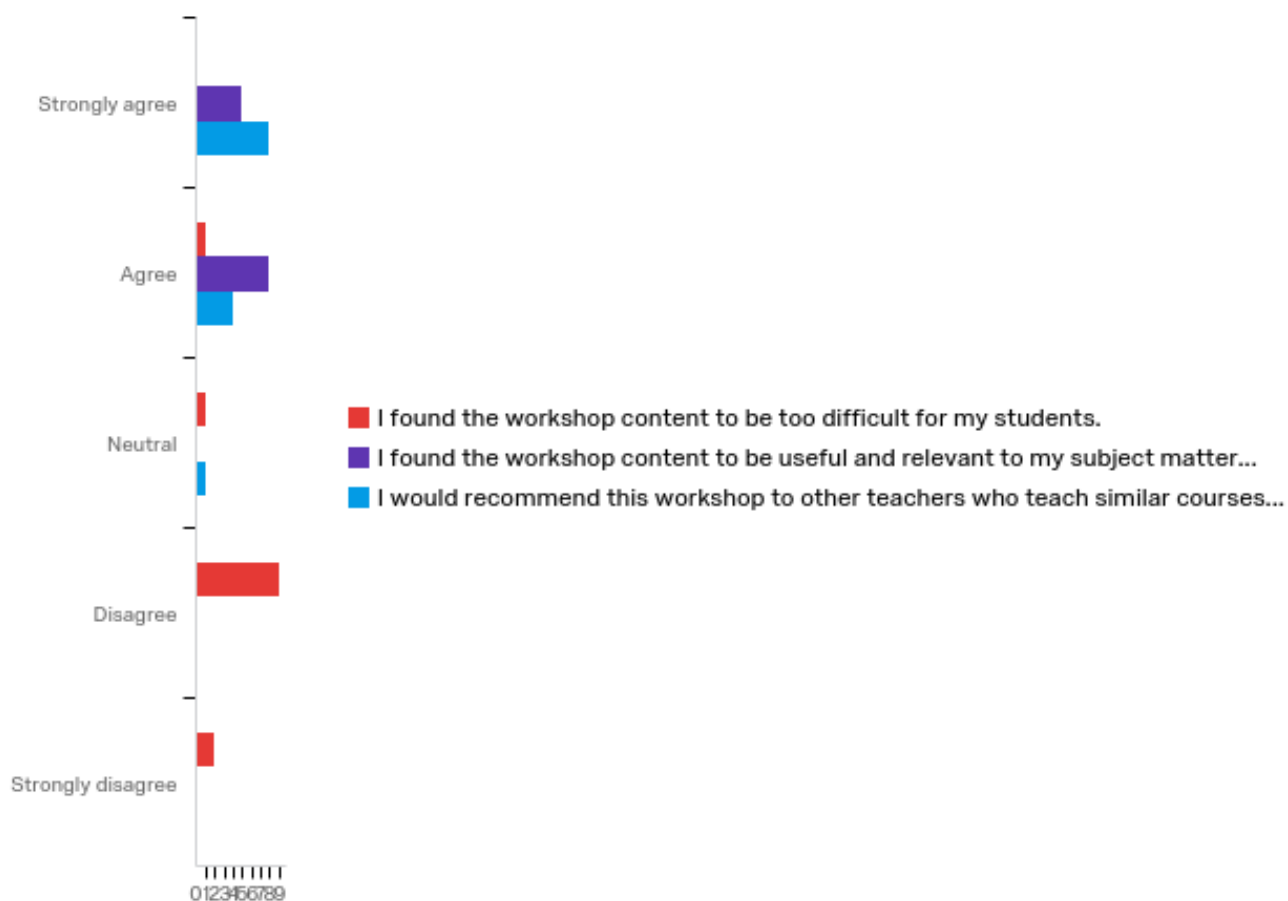
#	Question	Strongly agree		Agree		Neutral		Disagree		Strongly disagree		Total
1	I found the workshop content to be too difficult for my students.	0.00%	0	7.69%	1	7.69%	1	69.23%	9	15.38%	2	13
2	I found the workshop content to be useful and relevant to my subject matter.	38.46%	5	61.54%	8	0.00%	0	0.00%	0	0.00%	0	13
3	I would recommend this workshop to other teachers who teach similar courses.	61.54%	8	30.77%	4	7.69%	1	0.00%	0	0.00%	0	13

Q65 - At the beginning of this class, how would you rate your knowledge or experience of...

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Fundamental theory and concepts in geospatial technologies?	1.00	4.00	2.60	1.11	1.24	10
2	How geospatial technologies are applied in your area of expertise and related fields of employment?	1.00	4.00	2.40	1.02	1.04	10
3	Personally using geospatial technologies in work or research?	1.00	4.00	2.10	0.94	0.89	10

Q39 - One of the purposes of this professional development seminar is to raise the visibility of geospatial technologies (mapping, routing and navigation, and other location-based information) in education, business, and as a career path. Please rate, on a scale of 1 to 10, your awareness or experience of geospatial technologies in general...

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Before participating in this event	1.00	7.00	3.73	2.30	5.29	11
2	After participating in this event	4.00	10.00	7.23	1.62	2.64	13

Q41 - Please rate, on a scale of 1 to 10, your knowledge of how geospatial technologies are relevant to your specific industry, area of interest, or area of expertise.

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Before participating in this event	1.00	10.00	4.80	2.96	8.76	10
2	After participating in this event	5.00	10.00	7.46	1.65	2.71	13

43 - Please rate, on a scale of 1 to 10, your skill in using geospatial technologies to support your specific industry, area of interest, or area of expertise.

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Before participating in this event	1.00	10.00	3.20	2.71	7.36	10
2	After participating in this event	4.00	10.00	6.38	1.69	2.85	13

Q45 - Please rate, on a scale of 1 to 10, your intention to apply geospatial technologies in the future in your industry, area of interest, or area of expertise.

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Before participating in this event	1.00	7.00	3.40	1.85	3.44	10
2	After participating in this event	6.00	10.00	8.15	1.46	2.13	13

Q49 - Overall, how effective do you feel this professional development seminar was in helping you...
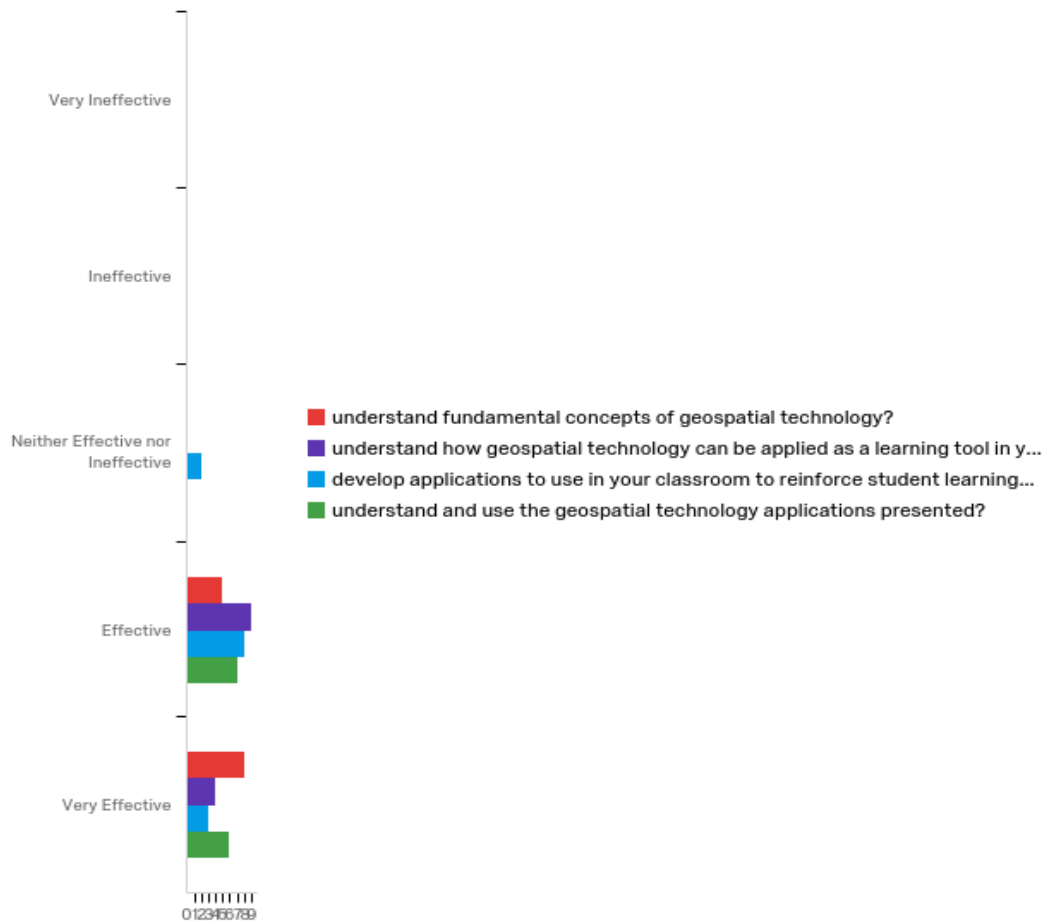
#	Question	Very Ineffective		Ineffective		Neither Effective nor Ineffective		Effective		Very Effective		Total
1	understand fundamental concepts of geospatial technology?	0.00%	0	0.00%	0	0.00%	0	38.46%	5	61.54%	8	13
2	understand how geospatial technology can be applied as a learning tool in your	0.00%	0	0.00%	0	0.00%	0	69.23%	9	30.77%	4	13

#											
3	develop applications to use in your classroom to reinforce student learning?	0.00%	0	0.00%	0	15.38%	2	61.54%	8	23.08%	3	13
4	understand and use the geospatial technology applications presented?	0.00%	0	0.00%	0	0.00%	0	53.85%	7	46.15%	6	13

Q73 - How many classroom instructional hours (or fractions of an hour) do you estimate will be devoted to the use of this content?

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Click to write Choice 1	1.10	10.00	6.90	3.37	11.36	13

Q53 - After taking this course, how confident are you in your abilities to...
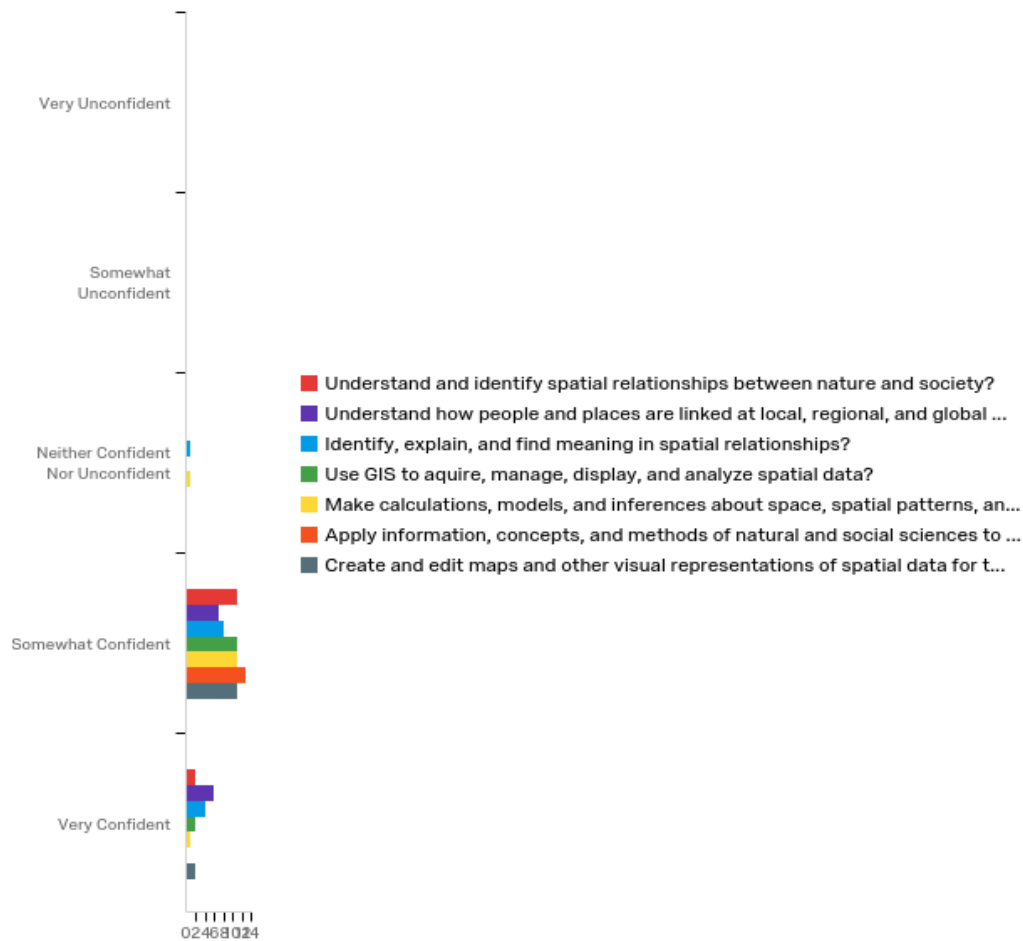
#	Question	Very Unconfident		Somewhat Unconfident		Neither Confident Nor Unconfident		Somewhat Confident		Very Confident		Total
1	Understand and identify spatial relationships between nature and society?	0.00%	0	0.00%	0	0.00%	0	84.62%	11	15.38%	2	13
2	Understand how people and places are linked at local, regional, and	0.00%	0	0.00%	0	0.00%	0	53.85%	7	46.15%	6	13

#	Question											Total
	global scales?											
3	Identify, explain, and find meaning in spatial relationships?	0.00%	0	0.00%	0	7.69%	1	61.54%	8	30.77%	4	13
4	Use GIS to acquire, manage, display, and analyze spatial data?	0.00%	0	0.00%	0	0.00%	0	84.62%	11	15.38%	2	13
5	Make calculations, models, and inferences about space, spatial patterns, and spatial relationships?	0.00%	0	0.00%	0	7.69%	1	84.62%	11	7.69%	1	13
6	Apply information, concepts, and methods of natural and social sciences to geographic questions and applications?	0.00%	0	0.00%	0	0.00%	0	100.00%	13	0.00%	0	13
7	Create and edit maps and other visual representations of spatial data for communicating information?	0.00%	0	0.00%	0	0.00%	0	84.62%	11	15.38%	2	13

Q55 - After taking this course, how confident are you in your abilities to...
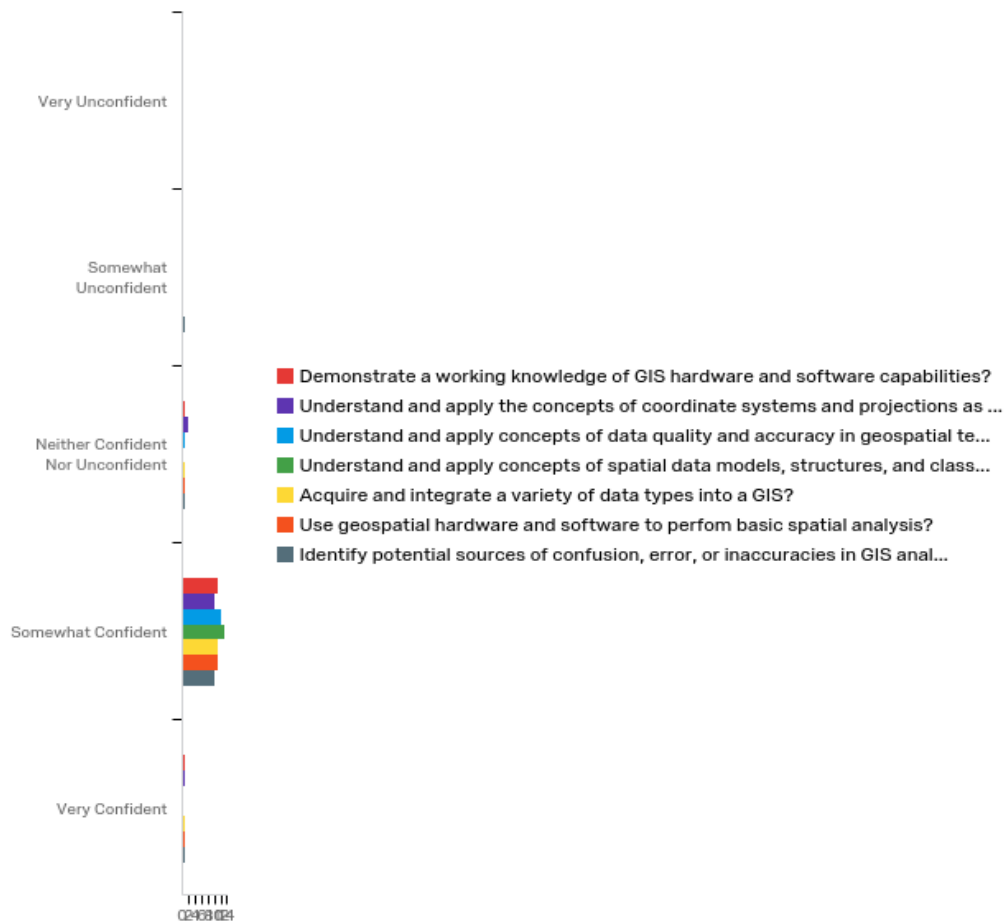
Legend:
- Demonstrate a working knowledge of GIS hardware and software capabilities?
- Understand and apply the concepts of coordinate systems and projections as ...
- Understand and apply concepts of data quality and accuracy in geospatial te...
- Understand and apply concepts of spatial data models, structures, and class...
- Acquire and integrate a variety of data types into a GIS?
- Use geospatial hardware and software to perfom basic spatial analysis?
- Identify potential sources of confusion, error, or inaccuracies in GIS anal...

#	Question	Very Unconfident		Somewhat Unconfident		Neither Confident Nor Unconfident		Somewhat Confident		Very Confident		Total
1	Demonstrate a working knowledge of GIS hardware and software capabilities?	0.00%	0	0.00%	0	7.69%	1	84.62%	11	7.69%	1	13
2	Understand and apply the concepts of coordinate	0.00%	0	0.00%	0	15.38%	2	76.92%	10	7.69%	1	13

#	Question	%	N	%	N	%	N	%	N	%	N	Total
	systems and projections as they relate to geospatial technologies?											
3	Understand and apply concepts of data quality and accuracy in geospatial technologies?	0.00%	0	0.00%	0	7.69%	1	92.31%	12	0.00%	0	13
4	Understand and apply concepts of spatial data models, structures, and classifications, as well as their appropriate uses?	0.00%	0	0.00%	0	0.00%	0	100.00%	13	0.00%	0	13
5	Acquire and integrate a variety of data types into a GIS?	0.00%	0	0.00%	0	7.69%	1	84.62%	11	7.69%	1	13
6	Use geospatial hardware and software to perfom basic spatial analysis?	0.00%	0	0.00%	0	7.69%	1	84.62%	11	7.69%	1	13
7	Identify potential sources of confusion, error, or inaccuracies	0.00%	0	7.69%	1	7.69%	1	76.92%	10	7.69%	1	13

| in GIS analysis and interpretation of analytical results?											

Q57 - After taking this course, how confident are you in your abilities to design and execute a geospatial project by...

Legend:
- Planning and implementing a project timeline successfully?
- Defining a problem using spatial questions (e.g., why is this here, how did...
- Identifying necessary resources (hardware, software, and data) to solve the...
- Developing a plan for acquiring or creating the necessary data?
- Creating a model or methodology for analyzing the data?
- Assessing data quality and accuracy based on analysis methods to be used?
- Analyze the data and understand potential sources of error or inaccuracies ...
- Identify target audiences and appropriate media for sharing results?
- Communicate the results of the project clearly and concisely using maps and...
- Communicate the results of the project clearly and concisely through oral a...

#	Question	Very Unconfident		Somewhat Unconfident		Neither Confident Nor Unconfident		Somewhat Confident		Very Confident		Total
1	Planning and implementing a project timeline successfully?	0.00%	0	0.00%	0	7.69%	1	76.92%	10	15.38%	2	13
2	Defining a problem using spatial questions (e.g., why is this here, how did it get here, what does it mean?)	0.00%	0	0.00%	0	7.69%	1	76.92%	10	15.38%	2	13
3	Identifying necessary resources (hardware, software, and data) to solve the problem?	0.00%	0	0.00%	0	7.69%	1	69.23%	9	23.08%	3	13
4	Developing a plan for acquiring or creating the necessary data?	0.00%	0	0.00%	0	7.69%	1	69.23%	9	23.08%	3	13
5	Creating a model or methodology for analyzing the data?	0.00%	0	0.00%	0	30.77%	4	53.85%	7	15.38%	2	13
6	Assessing data quality and accuracy based on analysis methods to be used?	0.00%	0	7.69%	1	15.38%	2	69.23%	9	7.69%	1	13
7	Analyze the data and understand	0.00%	0	7.69%	1	15.38%	2	69.23%	9	7.69%	1	13

	potential sources of error or inaccuracies that may impact what conclusions can be drawn?									
8	Identify target audiences and appropriate media for sharing results?	0.00%	0	0.00%	0	7.69%	1	69.23%	9	23.08%	3	13
9	Communicate the results of the project clearly and concisely using maps and/or other visualizations?	0.00%	0	0.00%	0	7.69%	1	61.54%	8	30.77%	4	13
10	Communicate the results of the project clearly and concisely through oral and written communications?	0.00%	0	0.00%	0	7.69%	1	61.54%	8	30.77%	4	13

Q67 - How likely are you to...
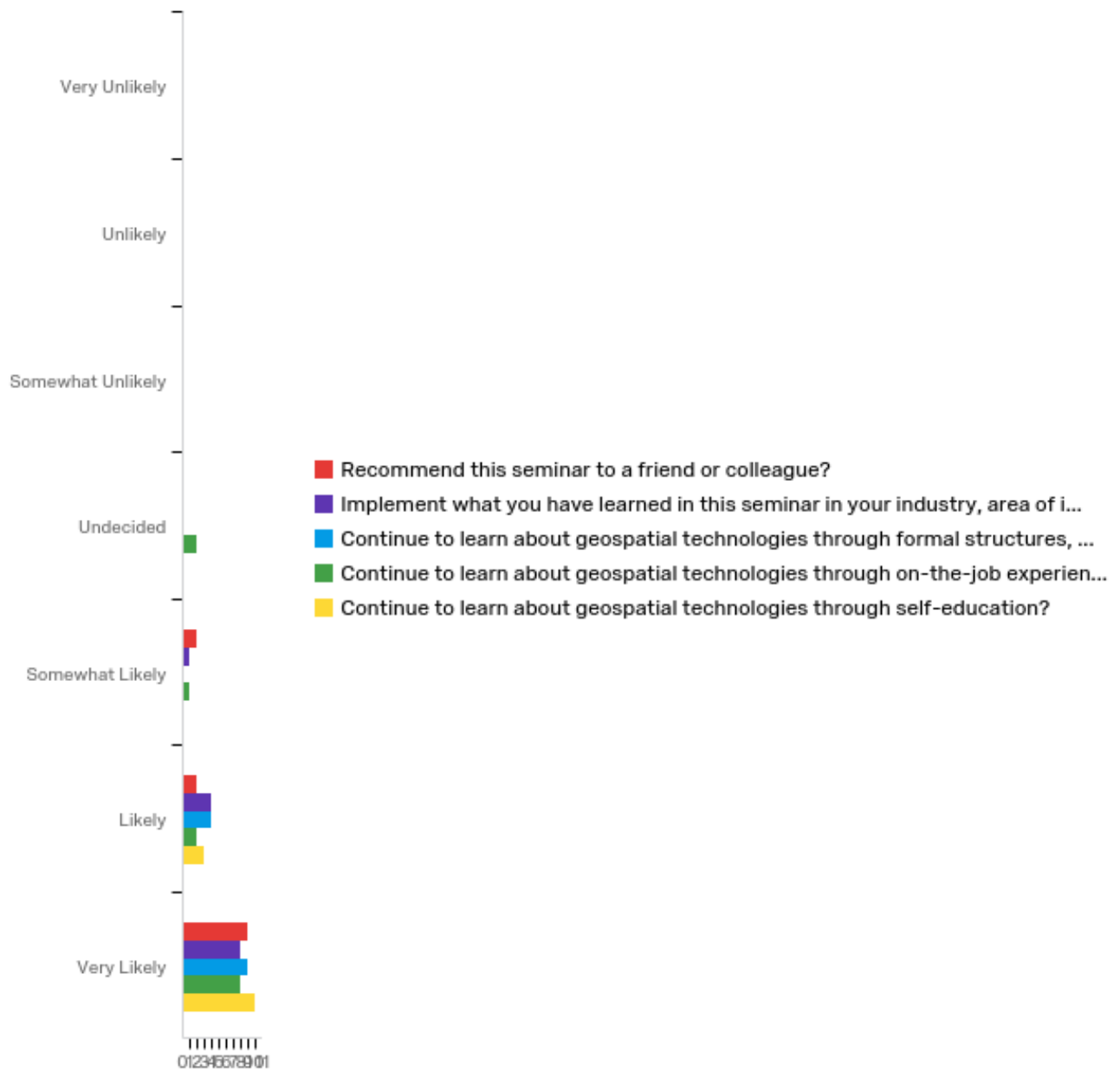
#	Question	Very Unlikely		Unlikely		Somewhat Unlikely		Undecided		Somewhat Likely		Likely		Very Likely		Total
1	Recommend this seminar	0.00%	0	0.00%	0	0.00%	0	0.00%	0	15.38%	2	15.38%	2	69.23%	9	13

	to a friend or colleague?														
2	Implement what you have learned in this seminar in your industry, area of interest, or area of expertise?	0.00%	0	0.00%	0	0.00%	0	0.00%	0	7.69%	1	30.77%	4	61.54%	8	13
3	Continue to learn about geospatial technologies through formal structures, like courses or workshops?	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	30.77%	4	69.23%	9	13
4	Continue to learn about geospatial technologies through on-the-job experiences or internships?	0.00%	0	0.00%	0	0.00%	0	15.38%	2	7.69%	1	15.38%	2	61.54%	8	13

5	Continue to learn about geospatial technologies through self-education?	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	23.08%	3	76.92%	10	13

Q69 - Did participating in this professional development seminar impact your curriculum?

Did participating in this professional development seminar impact your curriculum?

yes
Yes
yes
yes
It will as long as the time as needed becomes available
Yes
Yes
Yes
yes
Yes
hYes
Yes
Yes

Q71 - Did participating in this professional development seminar support any research activity?

Did participating in this professional development seminar support any research activity?

no
Not at present
no
yes
None at this time
no
Yes
Yes
yes
Yes
Yes
Yes
No currently

Q59 - Has your experience with geospatially-augmented instruction helped you develop marketable skill sets? Please explain.

Has your experience with geospatially-augmented instruction helped you develop marketable skill sets? Please explain.

yes. I now have another level of knowledge to implement in my classroom.

No

I do not believe that I have yet enough experience in this area to imagine any changes in my being marketable.

yes

don't know

I do not know and this time.

Yes, I have learned how to create maps and data to show issues in an area.

Possibly

yes

Yes. I can teach my students about ArcGIS.

Yes, as GIS is the second fastest growing field in the U.S., I feel this introduction to its scope and power has made me a more valuable and capable educator.

No

Q23 - Which part of the professional development seminar was most valuable to you?

Which part of the professional development seminar was most valuable to you?

Hands-on

The hands on portion was the most valuable to me.

The time generous time allotment for individual work and exploration was tremendous. That allowed me to pursue avenues of relevance to myself while still having the benefit of the instructor present to answer my questions.

hands-on

Data Collection

Learning a new program and finding other soft ware that is aviable for use in my classroom

It was VERY hands on.

I had an opportunity for discussion of possible ways to implement in my classroom and then learned the skills to follow through.

Learning how to operate ArcGis and Data Collector

Asking questions when needed.

The small seminar size that allowed individual attention from the instructor.

having the opportunity to explore the tools with assistance

Q25 - Which part of the professional development seminar was least valuable to you?

Which part of the professional development seminar was least valuable to you?

I found it all helpful

As someone familiarized with geospatial technology through the EAST Initiative, I felt the introductory discussions about how GIS can be used were the least valuable to me. They were still valuable, but I had a rudimentary understanding.

I would not count any part of the seminar as invaluable.

nothing that I can think of at this time.

Honestly it was ALL valuable.

None

None of it

I really think it was all very valuable.

Information about the file storage systems made use of by GIS.

so much new information to take in

Q27 - What topics would you like to see included in future professional development seminars?

What topics would you like to see included in future professional development seminars?

Just need more practice with the software

I'm not quite certain at this point.

I am unsure.

data mining

don't know

?

Possibly a bring your own project aspect.

More features and data analysis

Lesson Plans for disciplines

Continuing information on ArcGIS.

Materials and plans of successful implementations.

Cross-curricular projects

Q29 - What additional elements would you like to see incorporated in future professional development seminars?

What additional elements would you like to see incorporated in future professional development seminars?
I'm not quite certain at this point.
I am unsure.
solving tech issues with maps
?
Possibly a bring your own project aspect.
arcGIS Pro
Field work
Additional technology. There is always something new to learn about.
Quick guides to certain commonly proformed procedures within GIS, e.g. data gathering,importation, analytic tools, etc.
Survey tools

Q31 - What, if anything, would you change about the professional development seminar?

What, if anything, would you change about the professional development seminar?
I don't know that I would change anything.
I don't believe I would change anything.
I can think of no beneficial changes. The seminar was tremendous as designed.
1 day shorter
na
Specific scenarios for collecting data.
None
More hands on creating maps and lessons
More available sessions.
An additional day would have been welcome and useful.
Actually use the built in tutorial tools

Q33 - Do you have any additional comments or suggestions?

Do you have any additional comments or suggestions?

I found the laid-back style especially helpful to learning this new-to-me technology.
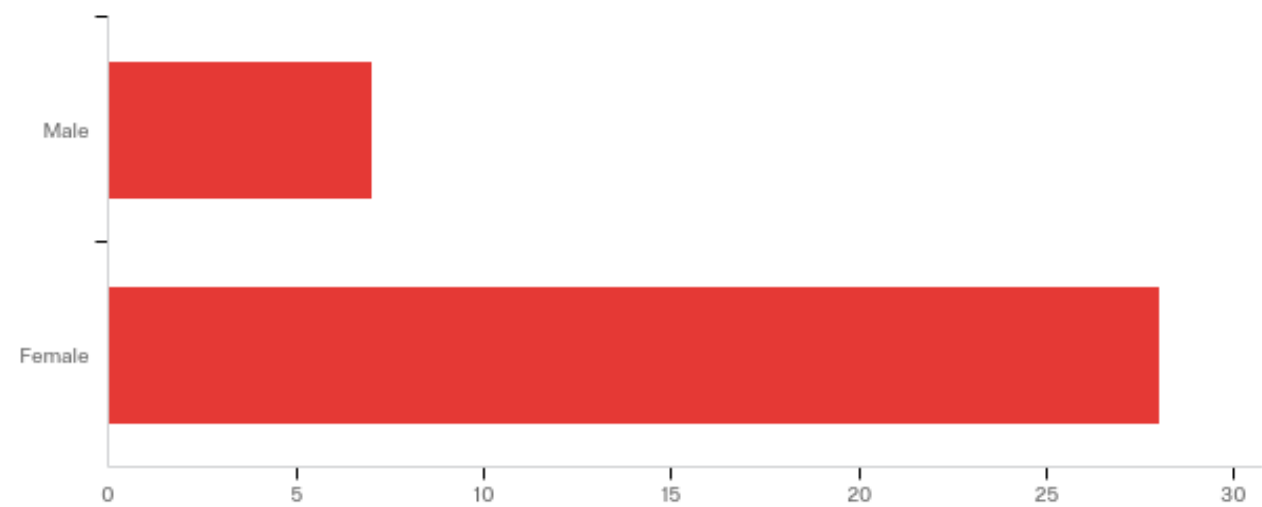
nope

na

nope

No

This was fantastic!!!

No.

A follow-up class, after we have had time to practice/use with our students
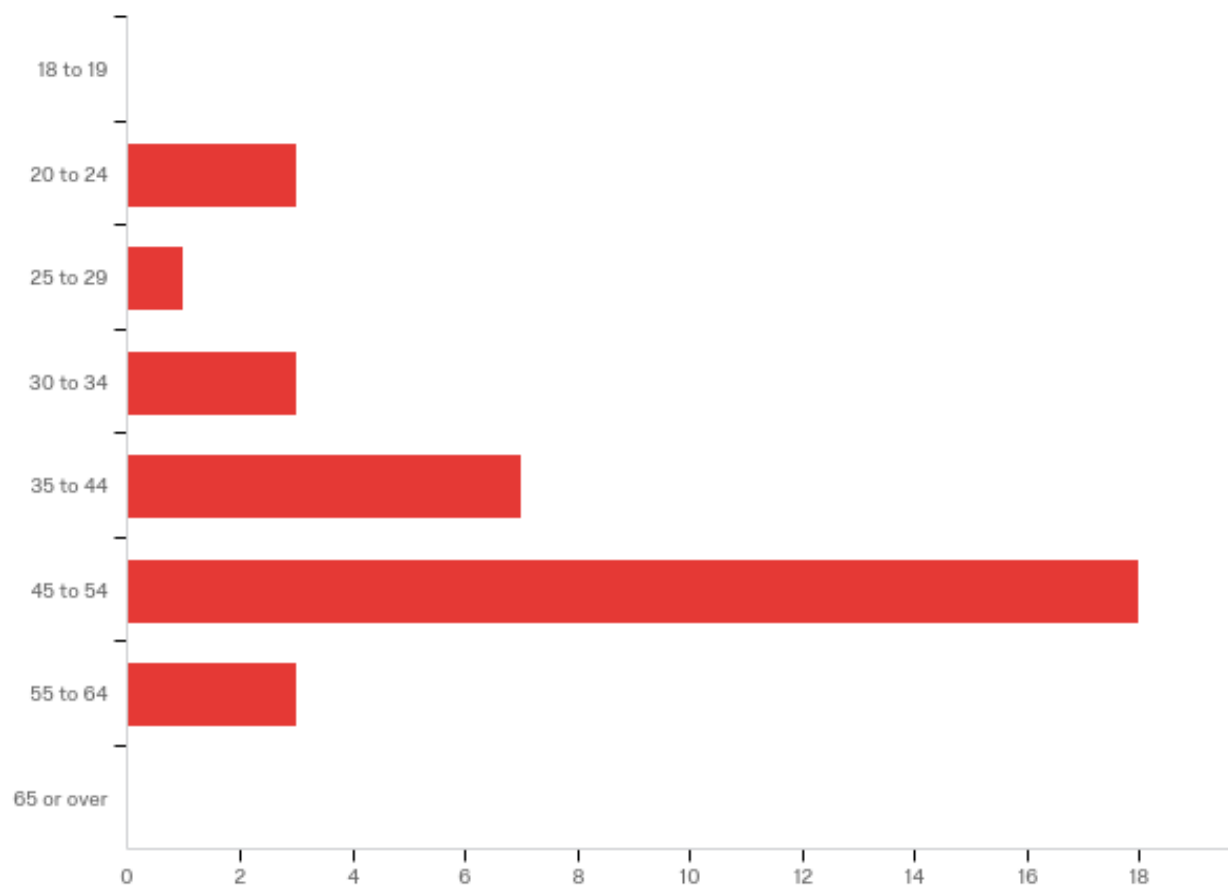
Appendix B

2018 Post Workshop Survey Responses

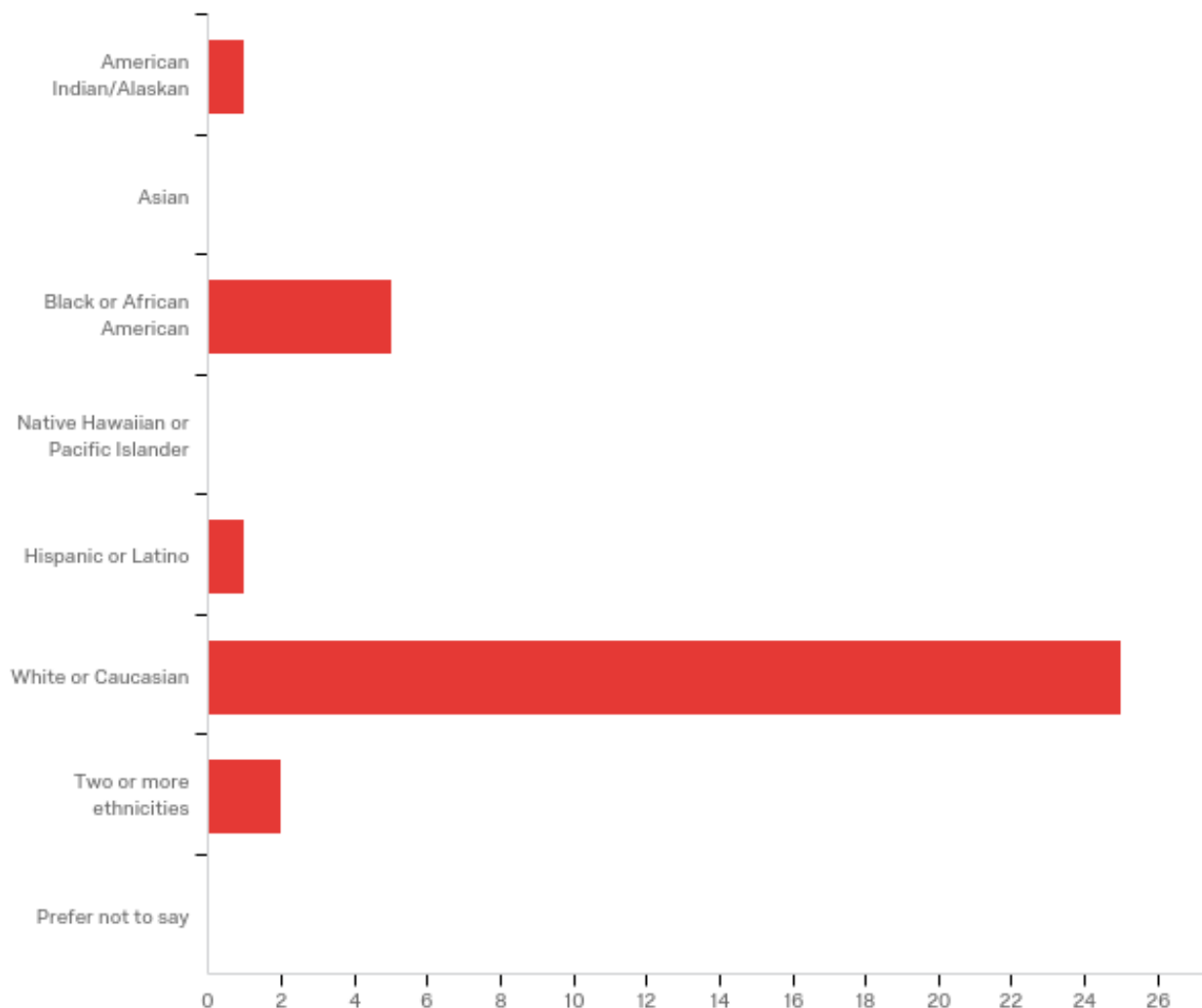*2018 Professional Development Series Participant Survey*

Q2 - I am...

#	Answer	%	Count
1	Male	20.00%	7
2	Female	80.00%	28
	Total	100%	35

Q3 - What is your age?

#	Answer	%	Count
1	18 to 19	0.00%	0
2	20 to 24	8.57%	3
3	25 to 29	2.86%	1
4	30 to 34	8.57%	3
5	35 to 44	20.00%	7
6	45 to 54	51.43%	18
7	55 to 64	8.57%	3
8	65 or over	0.00%	0
	Total	100%	35

Q4 - What is your ethnicity?

#	Answer	%	Count
1	American Indian/Alaskan	2.94%	1
2	Asian	0.00%	0
3	Black or African American	14.71%	5
4	Native Hawaiian or Pacific Islander	0.00%	0
5	Hispanic or Latino	2.94%	1
6	White or Caucasian	73.53%	25
7	Two or more ethnicities	5.88%	2
8	Prefer not to say	0.00%	0
	Total	100%	34

Q5 - I am...
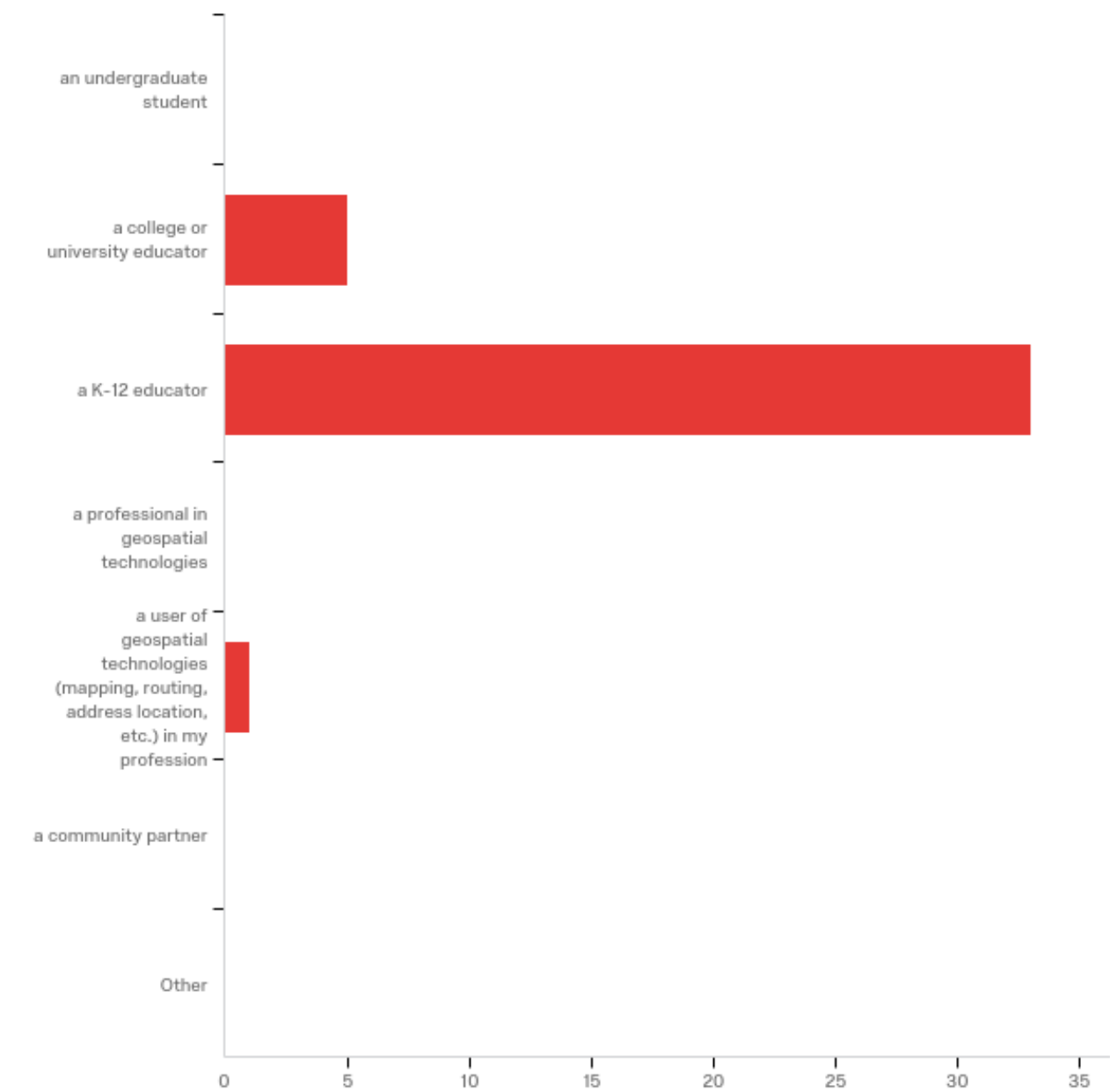
#	Answer	%	Count
1	an undergraduate student	0.00%	0
2	a college or university educator	12.82%	5
3	a K-12 educator	84.62%	33
4	a professional in geospatial technologies	0.00%	0
5	a user of geospatial technologies (mapping, routing, address location, etc.) in my profession	2.56%	1

6		a community partner	0.00%	0
7		Other	0.00%	0
		Total	100%	39

Other
Other - Text

Q6 - If you are an educator, how many years have you been employed as an educator?
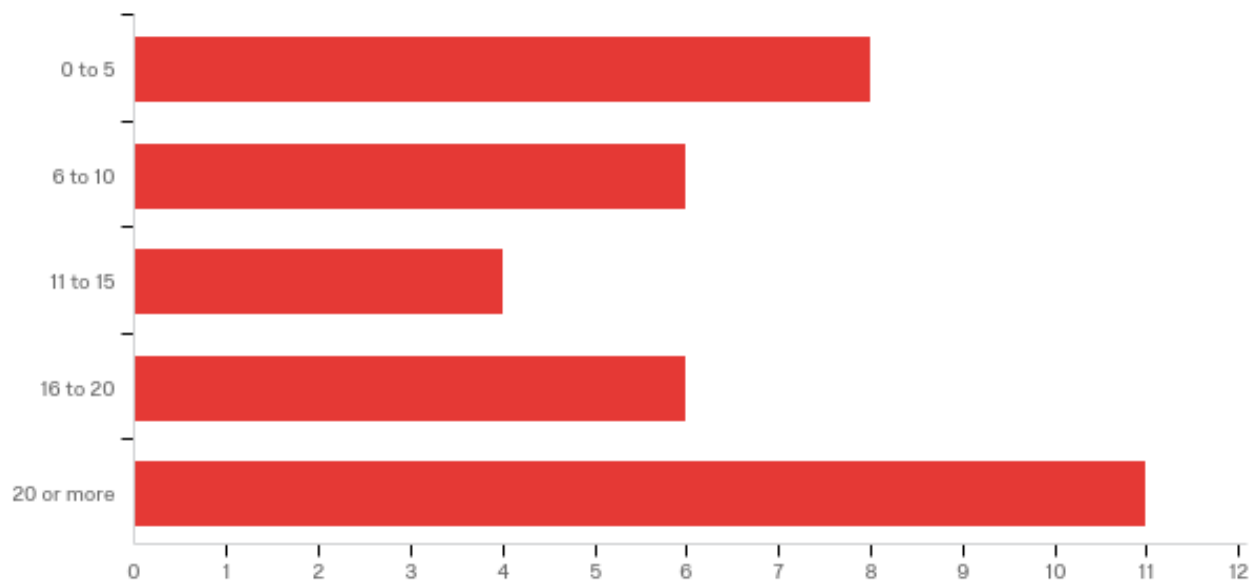
#	Answer	%	Count
1	0 to 5	22.86%	8
2	6 to 10	17.14%	6
3	11 to 15	11.43%	4
4	16 to 20	17.14%	6
5	20 or more	31.43%	11
	Total	100%	35

Q7 - If you are an educator, in what content area do you teach? (select all that apply)
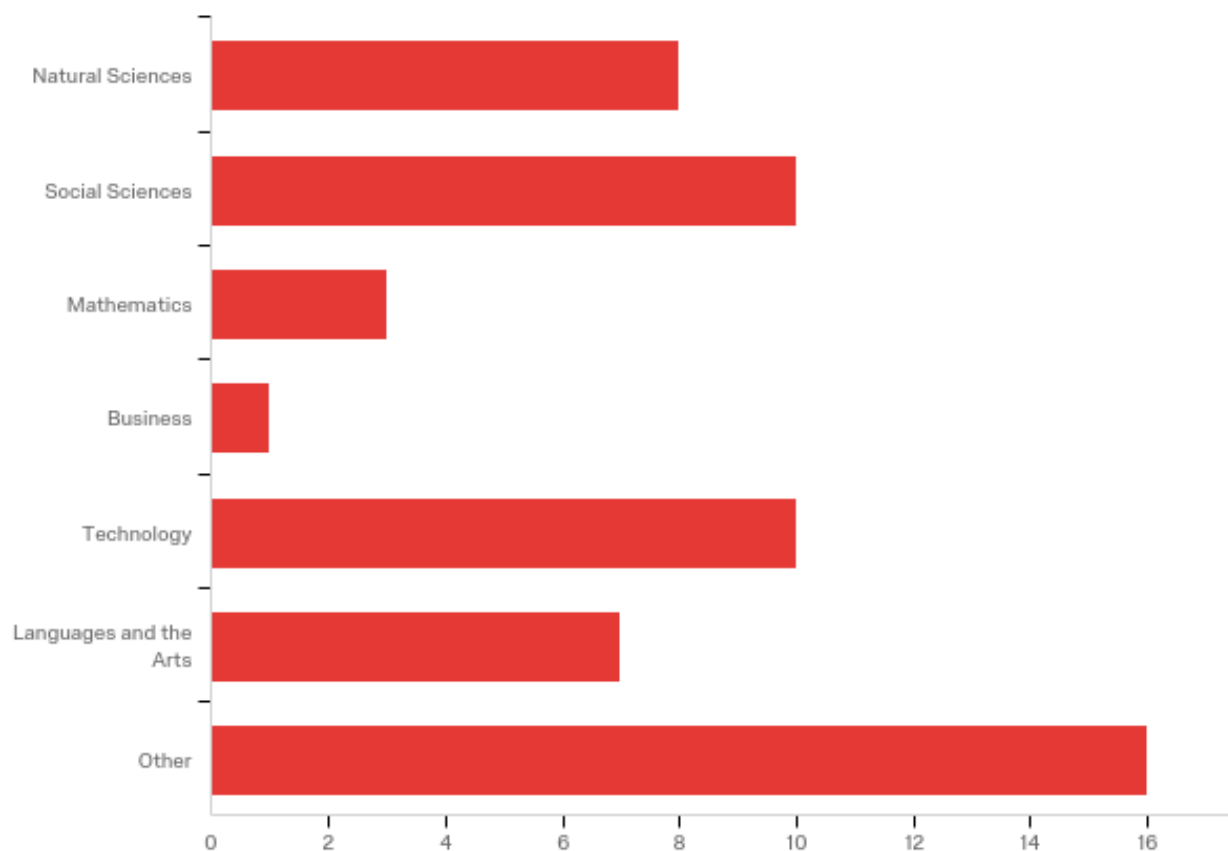
#	Answer	%	Count
1	Natural Sciences	14.55%	8
2	Social Sciences	18.18%	10
3	Mathematics	5.45%	3
4	Business	1.82%	1
5	Technology	18.18%	10
6	Languages and the Arts	12.73%	7
7	Other	29.09%	16
	Total	100%	55

Other

Other - Text

Character Education

Science
Teacher Cadet
EAST
Chemistry
physical science
Counselor/Administrator
Elementary EAST
Physical Science
EAST
Agriculture
Special Education
EAST

Q8 - If you are an educator, please estimate the combined student gender breakdown for the classes in which the professional development workshop content will be used.

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Male	0.00	100.00	48.17	18.72	350.37	35
2	Female	0.00	100.00	46.26	18.72	350.42	35

**Q9 - If you are an educator, please estimate the combined student racial breakdown for the classes in which the workshop content will be used.**

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	American Indian or Alaska Native	0.00	1.00	0.17	0.38	0.14	35
2	Asian	0.00	5.00	0.74	1.36	1.85	35
3	Black or African American	0.00	99.00	28.60	25.18	633.84	35
4	Hispanic or Latino	0.00	100.00	10.97	22.88	523.63	35
5	Native Hawaiian or other Pacific Islander	0.00	100.00	23.17	38.81	1505.86	35
6	White or Caucasian	0.00	100.00	41.85	30.16	909.36	26
7	Two or more ethnicities	0.00	4.00	0.31	0.91	0.83	26

Q10 - Where did you attend the professional development workshop offered through the OPENGATE grant?
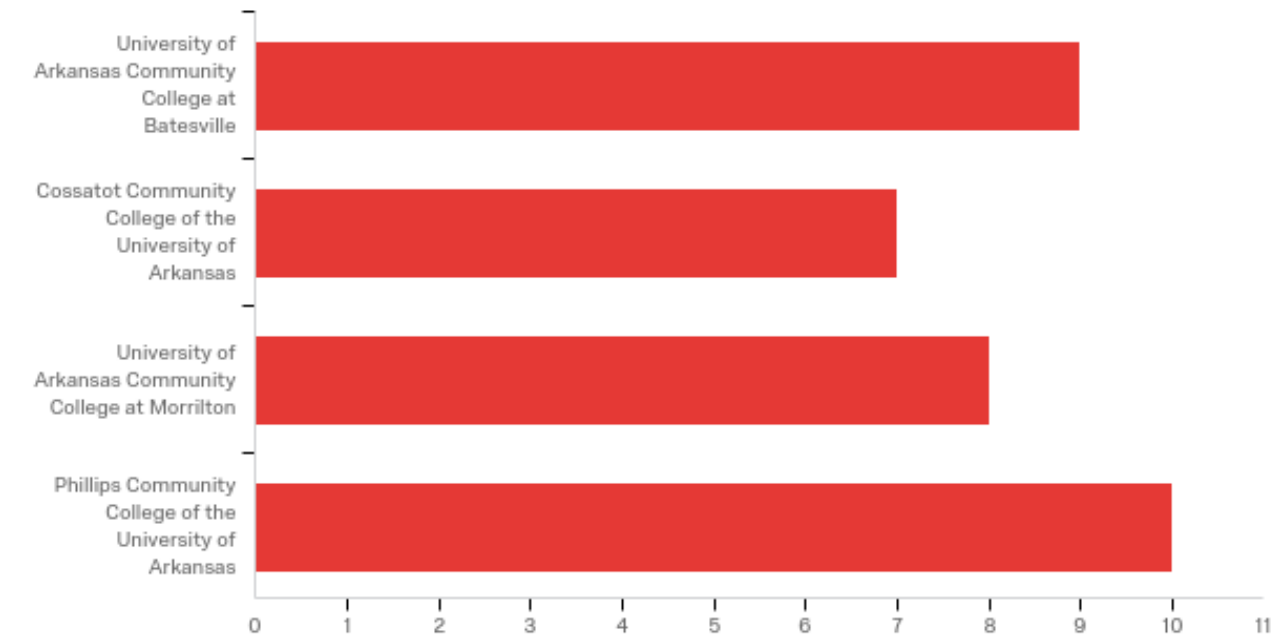
| #	Answer	%	Count
1	University of Arkansas Community College at Batesville	26.47%	9
2	Cossatot Community College of the University of Arkansas	20.59%	7
3	University of Arkansas Community College at Morrilton	23.53%	8
6	Phillips Community College of the University of Arkansas	29.41%	10
	Total	100%	34

Q11 - How would you rate the overall quality of the following:
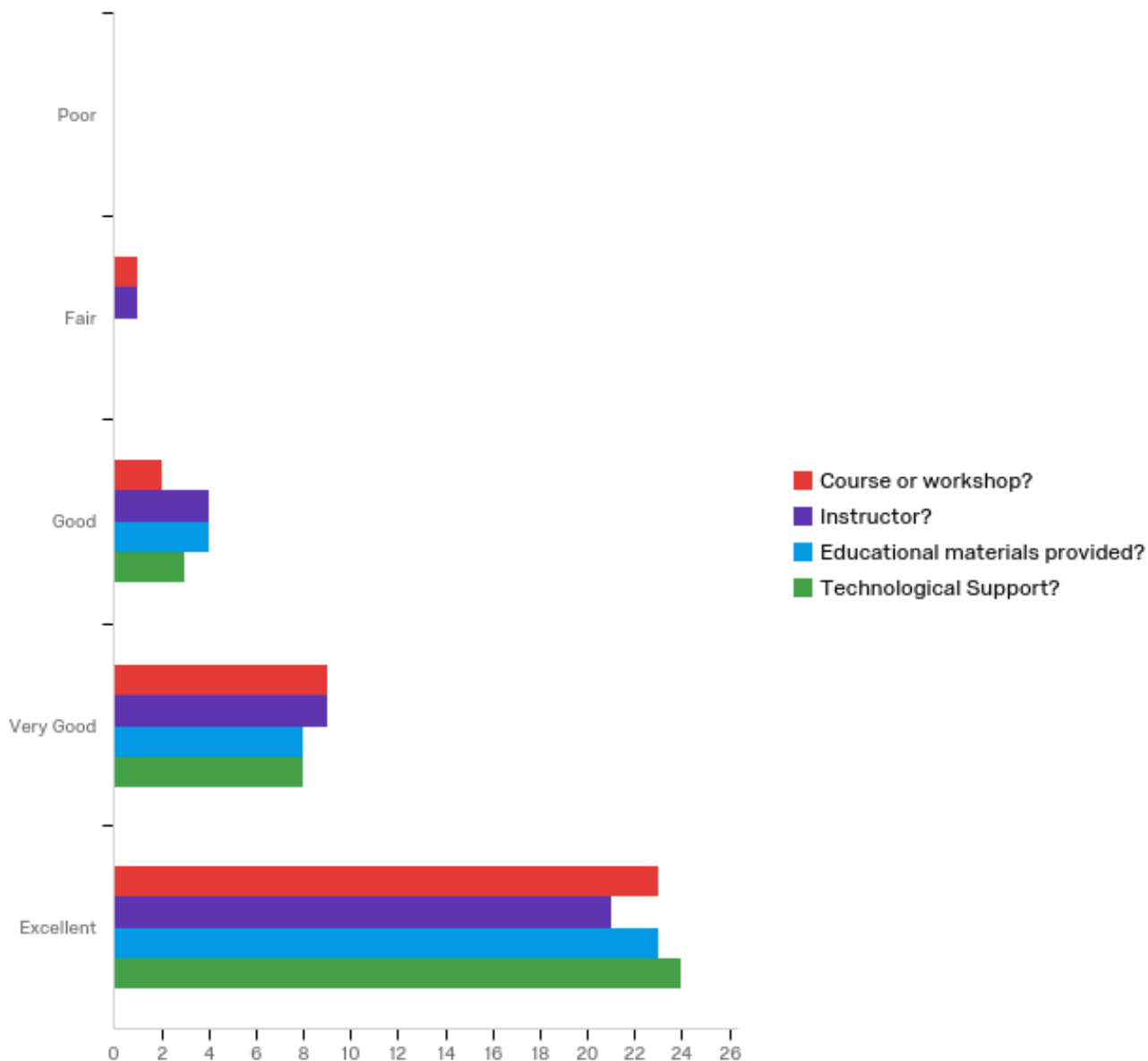
#	Question	Poor		Fair		Good		Very Good		Excellent		Total
1	Course or workshop?	0.00%	0	2.86%	1	5.71%	2	25.71%	9	65.71%	23	35
2	Instructor?	0.00%	0	2.86%	1	11.43%	4	25.71%	9	60.00%	21	35
3	Educational materials provided?	0.00%	0	0.00%	0	11.43%	4	22.86%	8	65.71%	23	35
4	Technological Support?	0.00%	0	0.00%	0	8.57%	3	22.86%	8	68.57%	24	35

Q12 - Please rate the professional development workshop facilities in terms of...
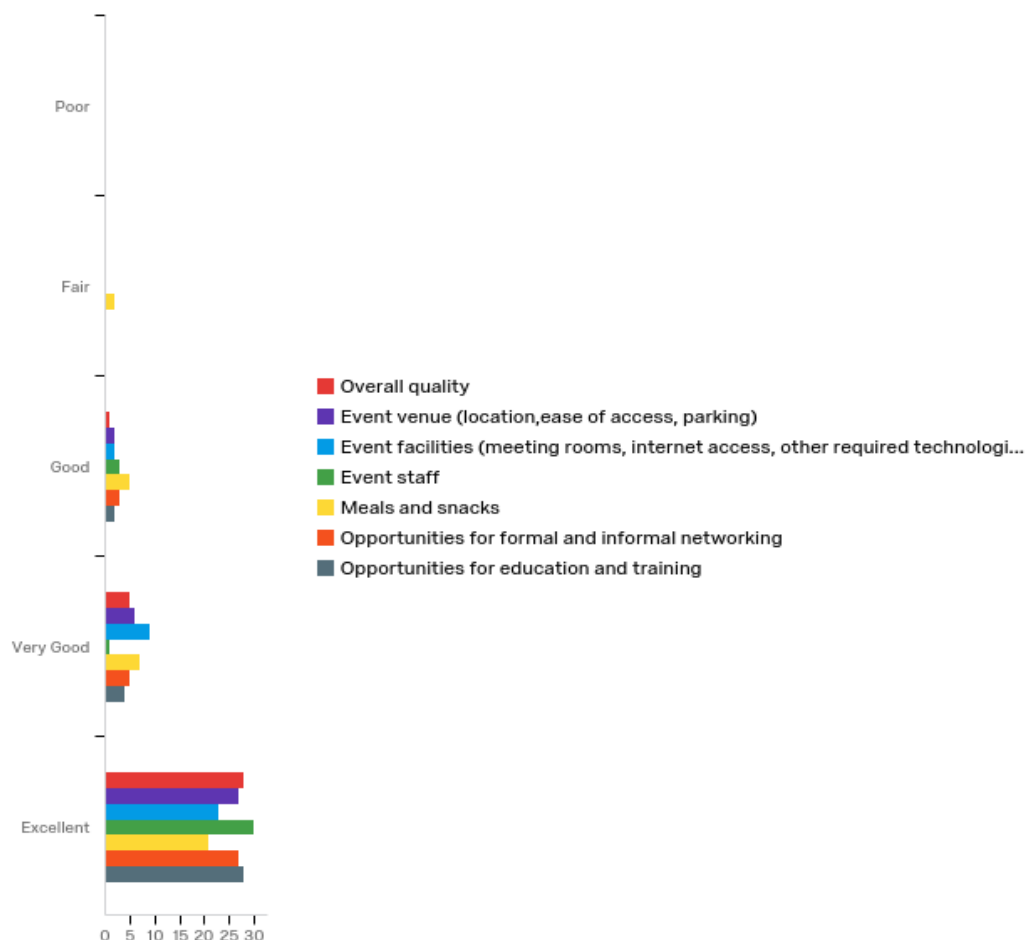
#	Question	Poor		Fair		Good		Very Good		Excellent		Total
1	Overall quality	0.00%	0	0.00%	0	2.94%	1	14.71%	5	82.35%	28	34
2	Event venue (location, ease of access, parking)	0.00%	0	0.00%	0	5.71%	2	17.14%	6	77.14%	27	35
3	Event facilities (meeting rooms, internet access, other required technologies or amenities)	0.00%	0	0.00%	0	5.88%	2	26.47%	9	67.65%	23	34
4	Event staff	0.00%	0	0.00%	0	8.82%	3	2.94%	1	88.24%	30	34
5	Meals and snacks	0.00%	0	5.71%	2	14.29%	5	20.00%	7	60.00%	21	35
6	Opportunities for formal and informal networking	0.00%	0	0.00%	0	8.57%	3	14.29%	5	77.14%	27	35
7	Opportunities for education and training	0.00%	0	0.00%	0	5.88%	2	11.76%	4	82.35%	28	34

Q13 - Please rate professional development workshop content and materials in terms of the following...

Legend:
- Overall quality
- Value of the topic
- Relevance of the information presented
- Expertise of the speaker or presenter
- Time allocated to technological training
- Time allocated to pedagogical and/or practical application of technology
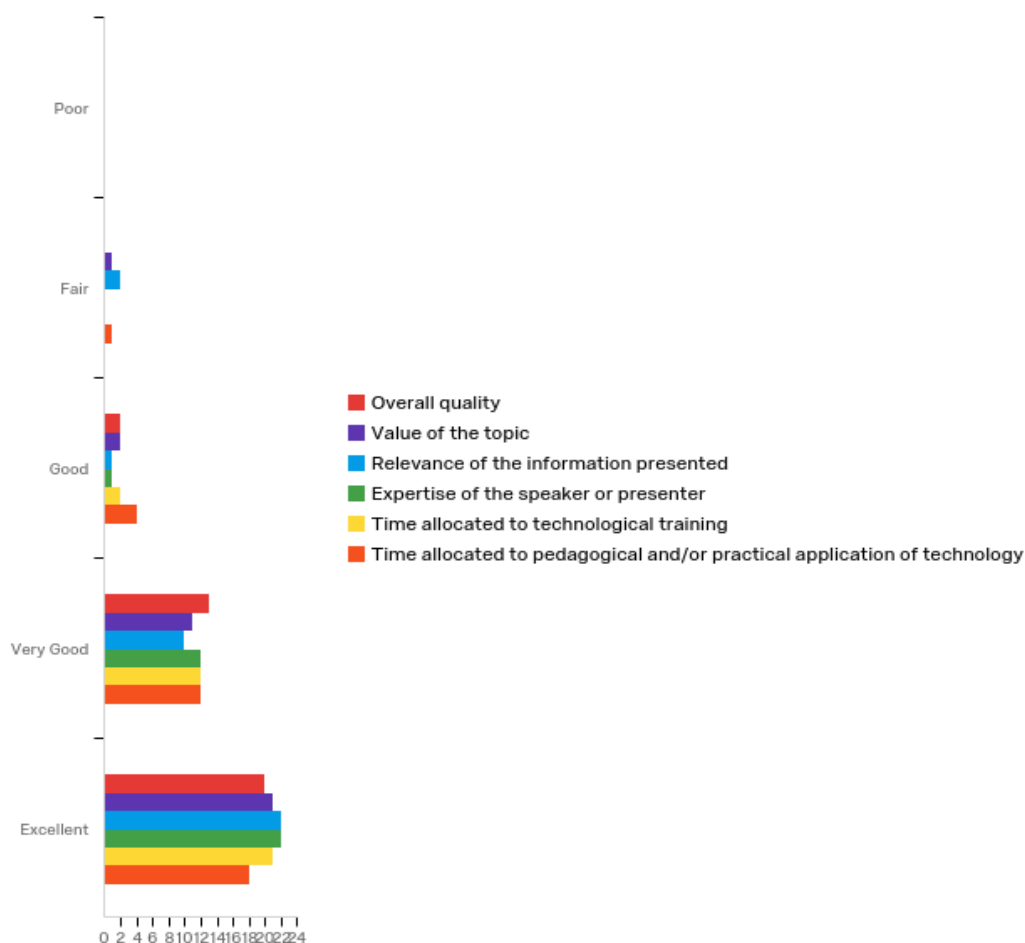
#	Question	Poor		Fair		Good		Very Good		Excellent	
1	Overall quality	0.00%	0	0.00%	0	16.67%	2	18.57%	13	16.13%	20
2	Value of the topic	0.00%	0	25.00%	1	16.67%	2	15.71%	11	16.94%	21
3	Relevance of the information presented	0.00%	0	50.00%	2	8.33%	1	14.29%	10	17.74%	22
4	Expertise of the speaker or presenter	0.00%	0	0.00%	0	8.33%	1	17.14%	12	17.74%	22
5	Time allocated to technological training	0.00%	0	0.00%	0	16.67%	2	17.14%	12	16.94%	21
6	Time allocated to pedagogical and/or practical application of technology	0.00%	0	25.00%	1	33.33%	4	17.14%	12	14.52%	18
	Total	Total	0	Total	4	Total	12	Total	70	Total	124

Q14 - What is the extent of your previous education in geospatial technologies?
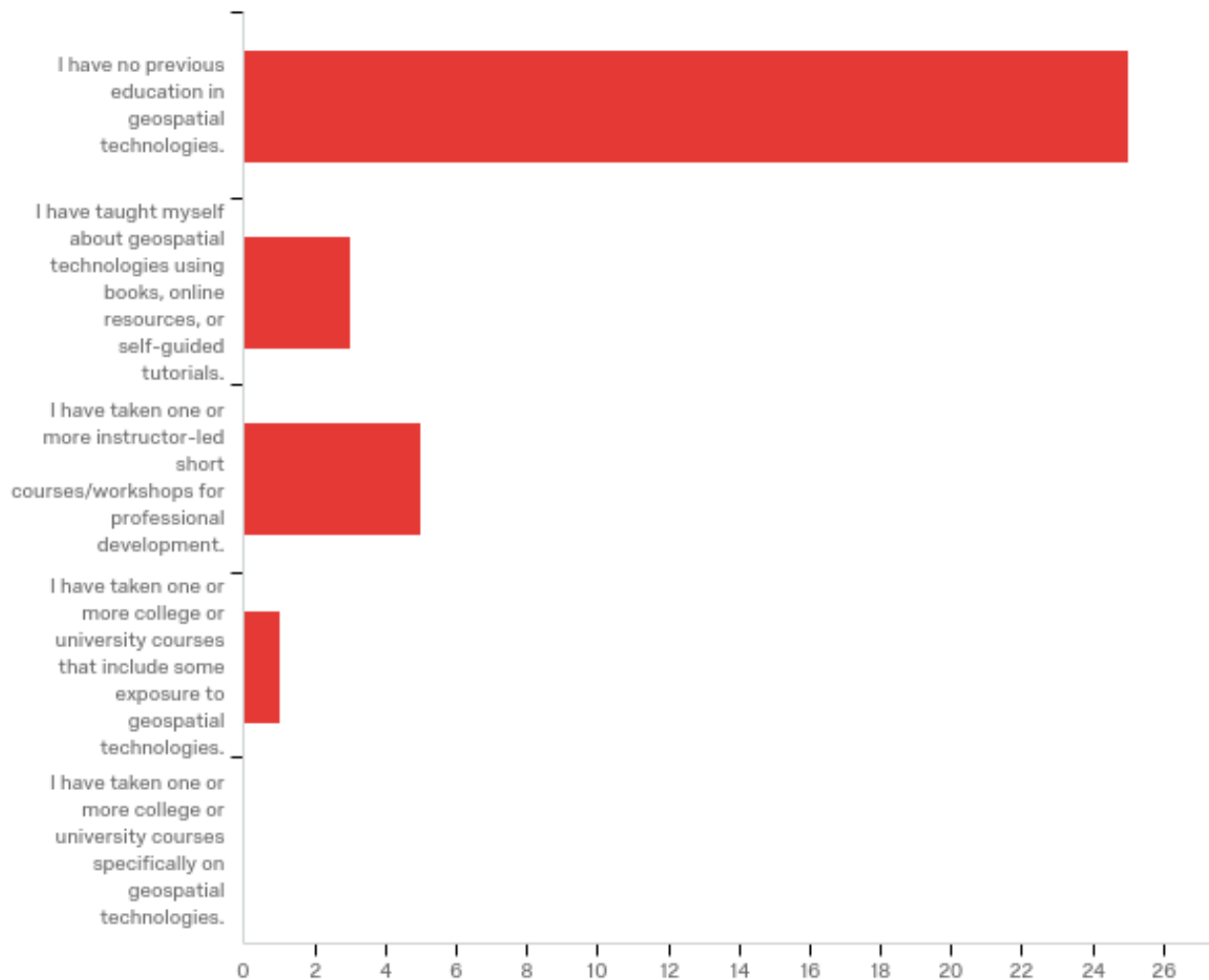
#	Answer	%	Count
1	I have no previous education in geospatial technologies.	73.53%	25
2	I have taught myself about geospatial technologies using books, online resources, or self-guided tutorials.	8.82%	3
3	I have taken one or more instructor-led short courses/workshops for professional development.	14.71%	5
4	I have taken one or more college or university courses that include some exposure to geospatial technologies.	2.94%	1
5	I have taken one or more college or university courses specifically on geospatial technologies.	0.00%	0
	Total	100%	34

Q15 - What is your experience with geospatial technologies in your content area, area of expertise, or related fields of employment?
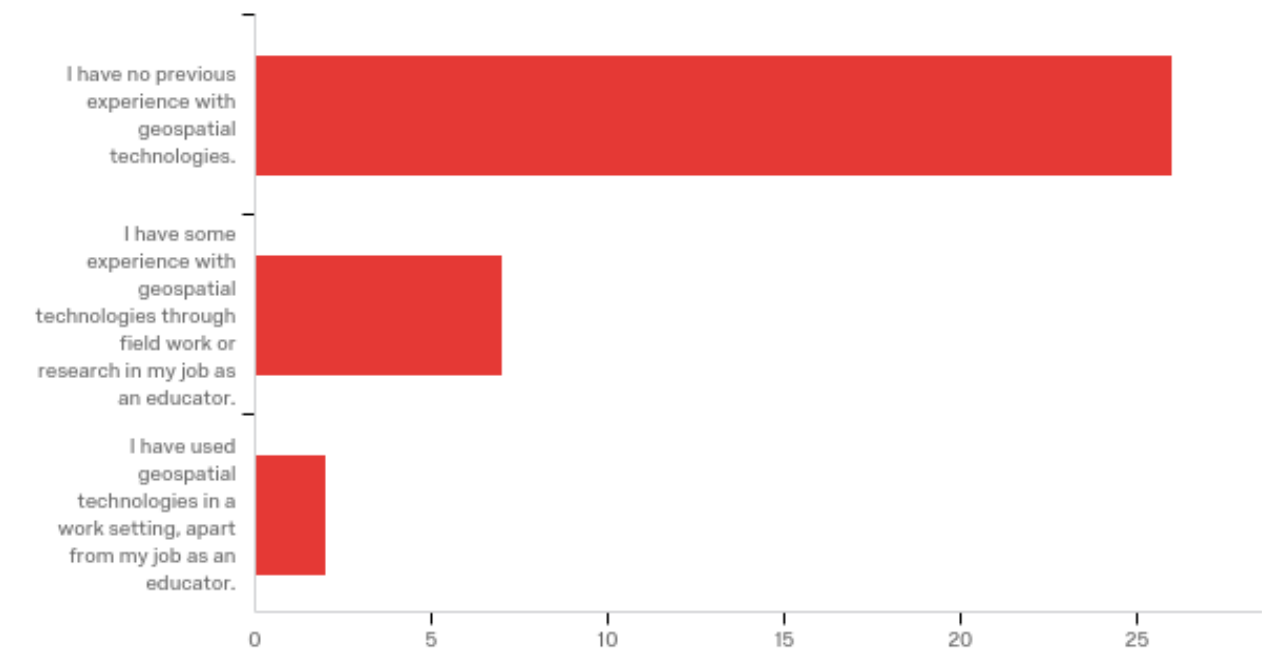
#	Answer	%	Count
1	I have no previous experience with geospatial technologies.	74.29%	26
2	I have some experience with geospatial technologies through field work or research in my job as an educator.	20.00%	7
3	I have used geospatial technologies in a work setting, apart from my job as an educator.	5.71%	2
	Total	100%	35

Q16 - Please respond to the following statements regarding the professional development workshop.

#	Question	Strongly agree		Agree		Neutral		Disagree		Strongly disagree		Total
1	I found the workshop content to be too difficult for my students.	2.86%	1	5.71%	2	11.43%	4	62.86%	22	17.14%	6	35
2	I found the workshop content to be useful and relevant to my subject matter.	45.71%	16	42.86%	15	8.57%	3	0.00%	0	2.86%	1	35
3	I would recommend this workshop to other teachers who teach similar courses.	60.00%	21	28.57%	10	5.71%	2	2.86%	1	2.86%	1	35

Q17 - At the beginning of the professional development workshop, how would you have rated your knowledge or experience of ...

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Fundamental theory and concepts in geospatial technologies?	1.00	4.00	1.96	0.94	0.88	26
2	How geospatial technologies are applied in your area of expertise and related fields of employment?	1.00	5.00	2.12	1.12	1.26	26
3	Personally using geospatial technologies in work or research?	1.00	4.00	2.04	0.95	0.91	23

Q18 - One purpose of this professional development workshop is to raise the visibility of geospatial technologies (mapping, routing and navigation, and other location-based information) in education, business, and as a career path.   Please rate, on a scale of 1 to 10, your knowledge of, or experience with, of geospatial technologies in general...

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Before participating in this event	1.00	9.00	2.65	2.02	4.07	26
2	After participating in this event	2.00	8.00	5.85	1.58	2.49	33

Q19 - Please rate, on a scale of 1 to 10, your knowledge of how geospatial technologies are relevant to your specific industry, area of interest, or area of expertise.

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Before participating in this event	1.00	9.00	3.26	2.33	5.41	23
2	After participating in this event	3.00	10.00	7.06	1.89	3.58	34

Q20 - Please rate, on a scale of 1 to 10, your skill in using geospatial technologies to support your specific industry, area of interest, or area of expertise.

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Before participating in this event	1.00	8.00	2.79	1.96	3.85	19
2	After participating in this event	1.00	10.00	6.27	2.11	4.44	33

Q21 - Please rate, on a scale of 1 to 10, your intention to apply geospatial technologies in the future in your industry, area of interest, or area of expertise.

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Before participating in this event	1.00	8.00	3.14	2.03	4.12	21
2	After participating in this event	3.00	10.00	7.21	2.22	4.93	34

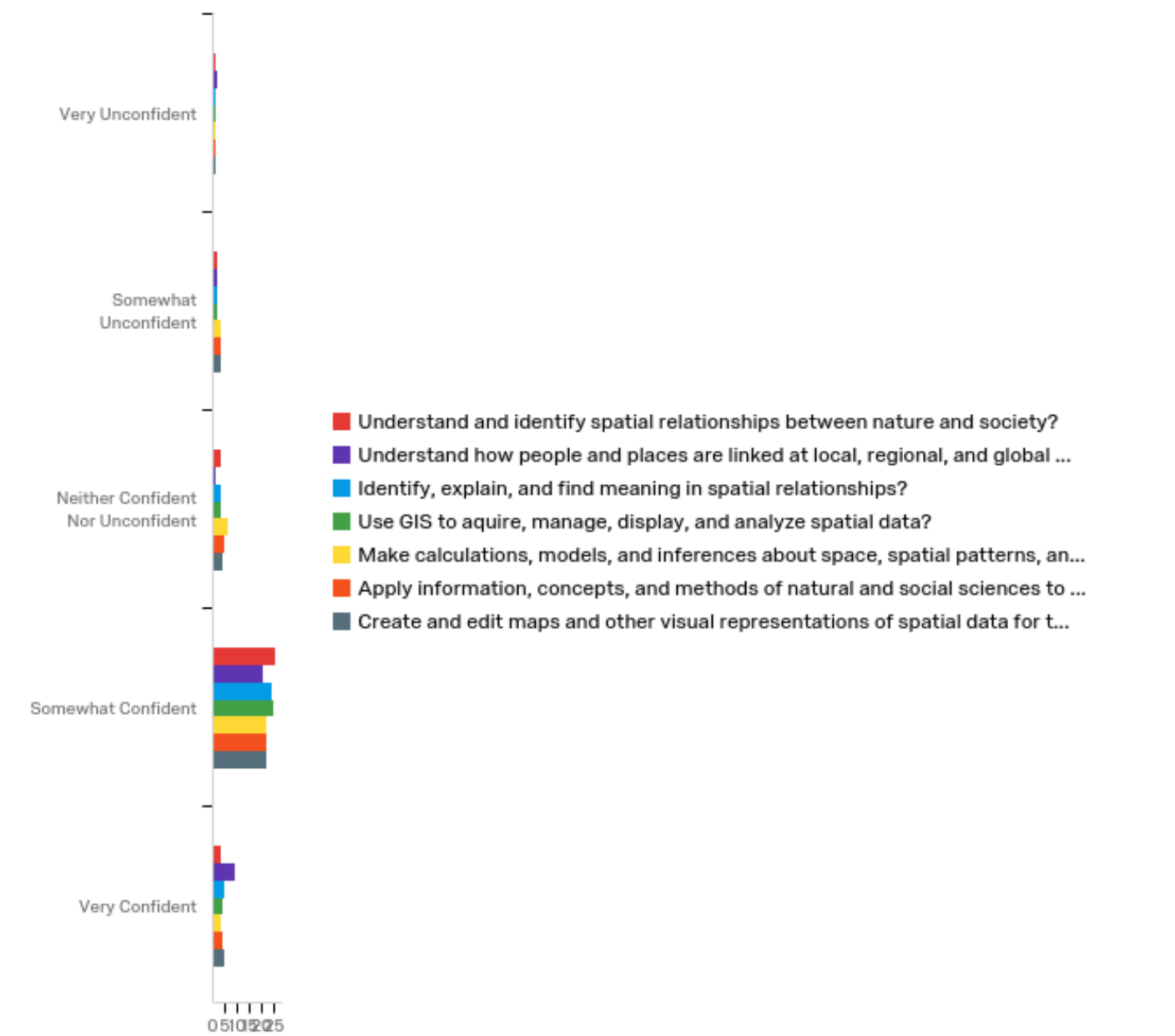# Q22 - Overall, how effective do you feel this professional development workshop was in helping you...
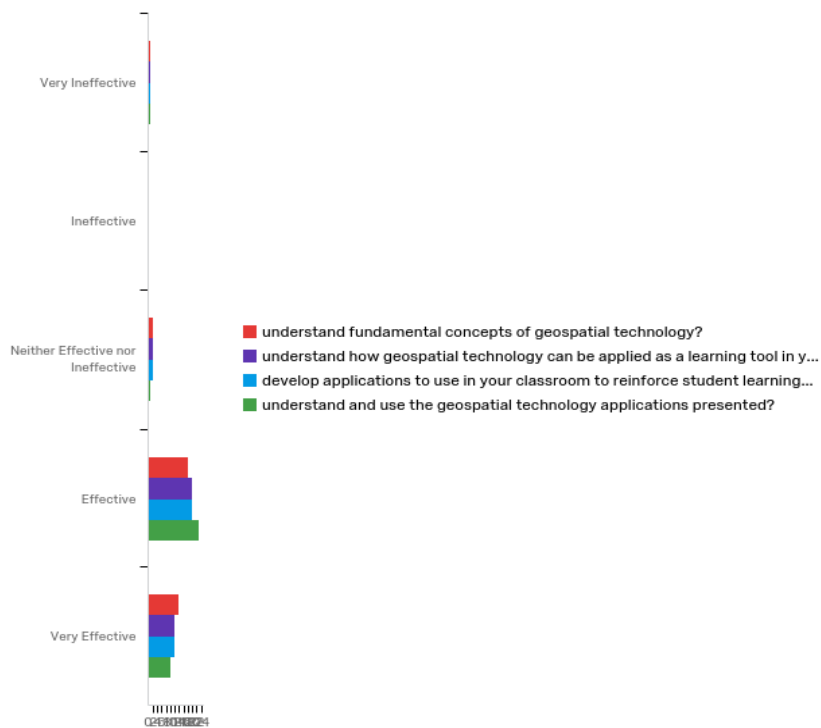
Legend:
- understand fundamental concepts of geospatial technology?
- understand how geospatial technology can be applied as a learning tool in y...
- develop applications to use in your classroom to reinforce student learning...
- understand and use the geospatial technology applications presented?

#	Question	Very Ineffective		Ineffective		Neither Effective nor Ineffective		Effective		Very Effective		Total
1	understand fundamental concepts of geospatial technology?	2.86%	1	0.00%	0	5.71%	2	51.43%	18	40.00%	14	35
2	understand how geospatial technology can be applied as a learning tool in your domain?	2.86%	1	0.00%	0	5.71%	2	57.14%	20	34.29%	12	35
3	develop applications to use in your classroom to reinforce student learning?	2.86%	1	0.00%	0	5.71%	2	57.14%	20	34.29%	12	35
4	understand and use the geospatial technology applications presented?	2.86%	1	0.00%	0	2.86%	1	65.71%	23	28.57%	10	35

Q23 - How many classroom instructional hours (or fractions of an hour) do you estimate will be devoted to the use of this content? (in average hours per week of instruction)

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Hours	0.00	8.60	3.57	2.34	5.47	33

Q24 - After taking this course, how confident are you in your abilities to...

Legend:
- Understand and identify spatial relationships between nature and society?
- Understand how people and places are linked at local, regional, and global ...
- Identify, explain, and find meaning in spatial relationships?
- Use GIS to aquire, manage, display, and analyze spatial data?
- Make calculations, models, and inferences about space, spatial patterns, an...
- Apply information, concepts, and methods of natural and social sciences to ...
- Create and edit maps and other visual representations of spatial data for t...

#	Question	Very Unconfident		Somewhat Unconfident		Neither Confident Nor Unconfident		Somewhat Confident		Very Confident		Total
1	Understand and identify spatial relationships between nature and society?	2.86%	1	5.71%	2	8.57%	3	74.29%	26	8.57%	3	35
2	Understand how people	5.71%	2	5.71%	2	2.86%	1	60.00%	21	25.71%	9	35

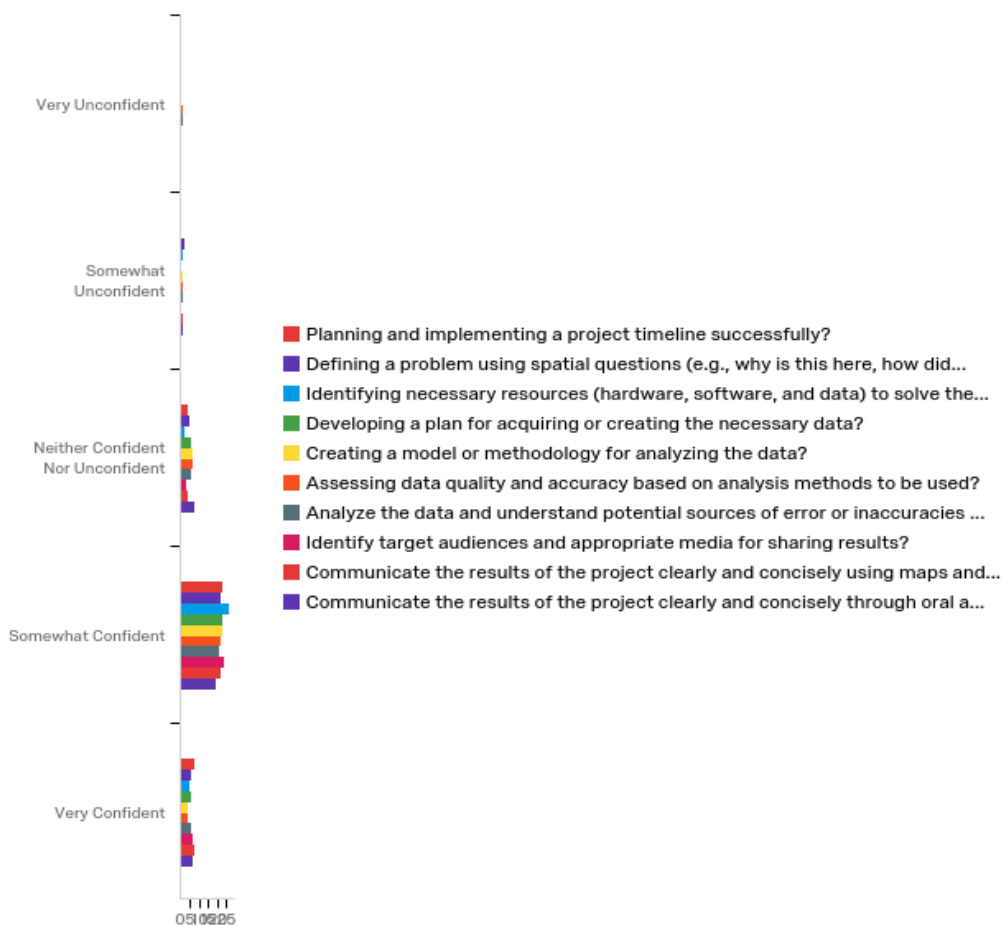| #											
	and places are linked at local, regional, and global scales?										
3	Identify, explain, and find meaning in spatial relationships?	2.86%	1	5.71%	2	8.57%	3	68.57%	24	14.29%	5	35
4	Use GIS to aquire, manage, display, and analyze spatial data?	2.86%	1	5.71%	2	8.57%	3	71.43%	25	11.43%	4	35
5	Make calculations, models, and inferences about space, spatial patterns, and spatial relationships?	2.86%	1	8.57%	3	17.14%	6	62.86%	22	8.57%	3	35
6	Apply information, concepts, and methods of natural and social sciences to geographic questions and applications?	2.86%	1	8.57%	3	14.29%	5	62.86%	22	11.43%	4	35
7	Create and edit maps and other visual representations of spatial data for the purpose of communicating information?	2.86%	1	8.57%	3	11.43%	4	62.86%	22	14.29%	5	35

Q25 - After taking this course, how confident are you in your abilities to...
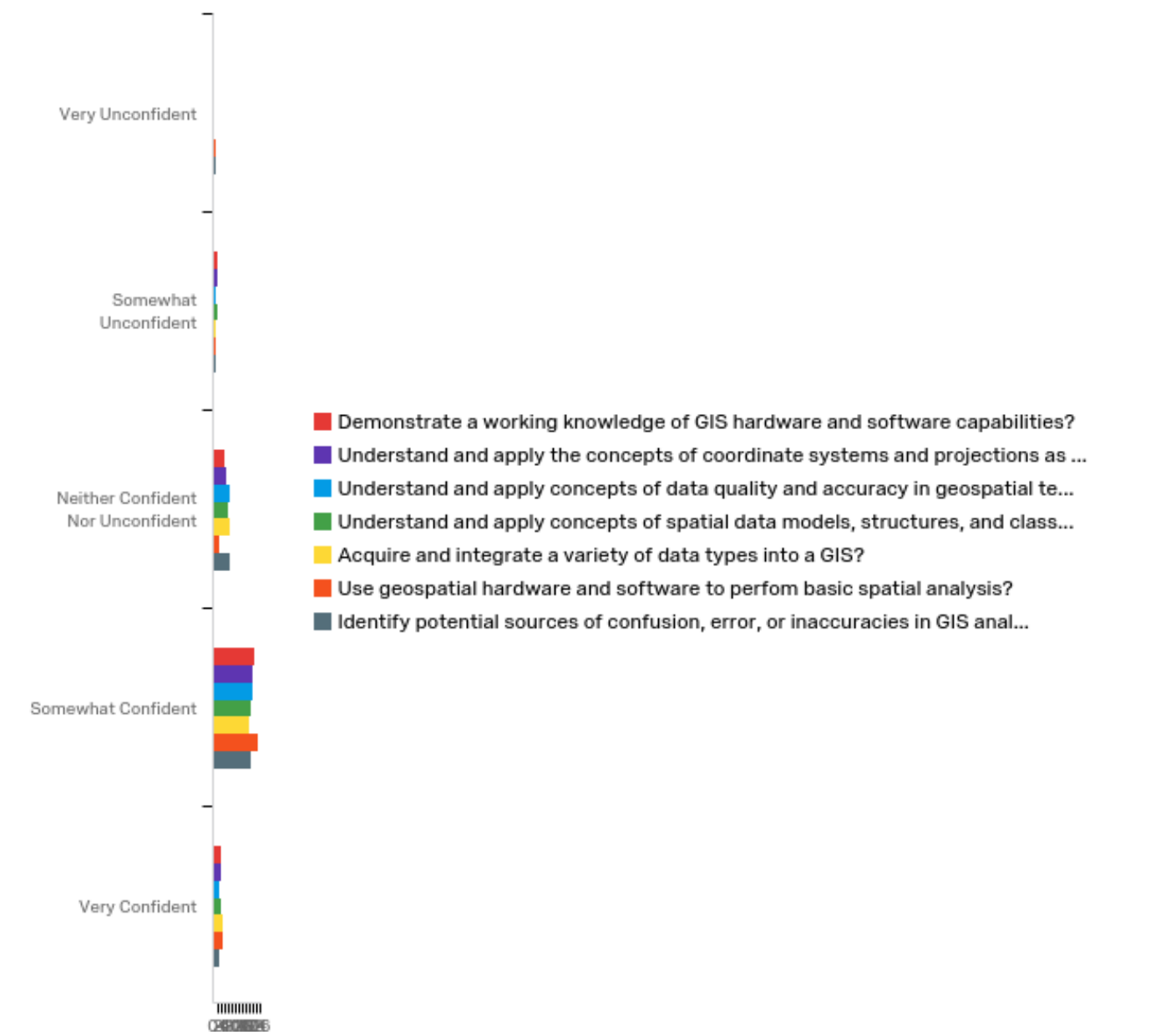
Legend:
- ■ Demonstrate a working knowledge of GIS hardware and software capabilities?
- ■ Understand and apply the concepts of coordinate systems and projections as ...
- ■ Understand and apply concepts of data quality and accuracy in geospatial te...
- ■ Understand and apply concepts of spatial data models, structures, and class...
- ■ Acquire and integrate a variety of data types into a GIS?
- ■ Use geospatial hardware and software to perfom basic spatial analysis?
- ■ Identify potential sources of confusion, error, or inaccuracies in GIS anal...

#	Question	Very Unconfident		Somewhat Unconfident		Neither Confident Nor Unconfident		Somewhat Confident		Very Confident		Total
1	Demonstrate a working knowledge of GIS hardware and software capabilities?	0.00%	0	5.71%	2	17.14%	6	65.71%	23	11.43%	4	35
2	Understand and apply the concepts of	0.00%	0	5.71%	2	20.00%	7	62.86%	22	11.43%	4	35

|										
	coordinate systems and projections as they relate to geospatial technologies?									
3	Understand and apply concepts of data quality and accuracy in geospatial technologies?	0.00%	0	2.86%	1	25.71%	9	62.86%	22	8.57%	3	35
4	Understand and apply concepts of spatial data models, structures, and classifications, as well as their appropriate uses?	0.00%	0	5.71%	2	22.86%	8	60.00%	21	11.43%	4	35
5	Acquire and integrate a variety of data types into a GIS?	0.00%	0	2.86%	1	25.71%	9	57.14%	20	14.29%	5	35
6	Use geospatial hardware and software to perfom basic spatial analysis?	2.86%	1	2.86%	1	8.57%	3	71.43%	25	14.29%	5	35
7	Identify potential sources of confusion, error, or inaccuracies in GIS analysis and interpretation of analytical results?	2.86%	1	2.86%	1	25.71%	9	60.00%	21	8.57%	3	35

Q26 - After taking this course, how confident are you in your abilities to design and execute a geospatial project by...

Legend:
- Planning and implementing a project timeline successfully?
- Defining a problem using spatial questions (e.g., why is this here, how did...
- Identifying necessary resources (hardware, software, and data) to solve the...
- Developing a plan for acquiring or creating the necessary data?
- Creating a model or methodology for analyzing the data?
- Assessing data quality and accuracy based on analysis methods to be used?
- Analyze the data and understand potential sources of error or inaccuracies ...
- Identify target audiences and appropriate media for sharing results?
- Communicate the results of the project clearly and concisely using maps and...
- Communicate the results of the project clearly and concisely through oral a...

#	Question	Very Unconfident		Somewhat Unconfident		Neither Confident Nor Unconfident		Somewhat Confident		Very Confident		Total
1	Planning and implementing a project timeline successfully?	0.00%	0	0.00%	0	11.43%	4	65.71%	23	22.86%	8	35
2	Defining a problem using spatial questions (e.g., why is this here, how did it get here, what does it mean?)	0.00%	0	5.71%	2	14.29%	5	62.86%	22	17.14%	6	35
3	Identifying necessary resources (hardware,	0.00%	0	2.86%	1	5.71%	2	77.14%	27	14.29%	5	35

#		%	n	%	n	%	n	%	n	%	n	Total
	software, and data) to solve the problem?											
4	Developing a plan for acquiring or creating the necessary data?	0.00%	0	0.00%	0	17.14%	6	65.71%	23	17.14%	6	35
5	Creating a model or methodology for analyzing the data?	0.00%	0	2.86%	1	20.00%	7	65.71%	23	11.43%	4	35
6	Assessing data quality and accuracy based on analysis methods to be used?	2.86%	1	2.86%	1	20.00%	7	62.86%	22	11.43%	4	35
7	Analyze the data and understand potential sources of error or inaccuracies that may impact what conclusions can be drawn?	2.86%	1	2.86%	1	17.14%	6	60.00%	21	17.14%	6	35
8	Identify target audiences and appropriate media for sharing results?	0.00%	0	0.00%	0	8.82%	3	70.59%	24	20.59%	7	34
9	Communicate the results of the project clearly and concisely using maps and/or other visualizations?	0.00%	0	2.86%	1	11.43%	4	62.86%	22	22.86%	8	35
10	Communicate the results of the project clearly and concisely through oral and written communications?	0.00%	0	2.86%	1	22.86%	8	54.29%	19	20.00%	7	35

Q27 - How likely are you to...
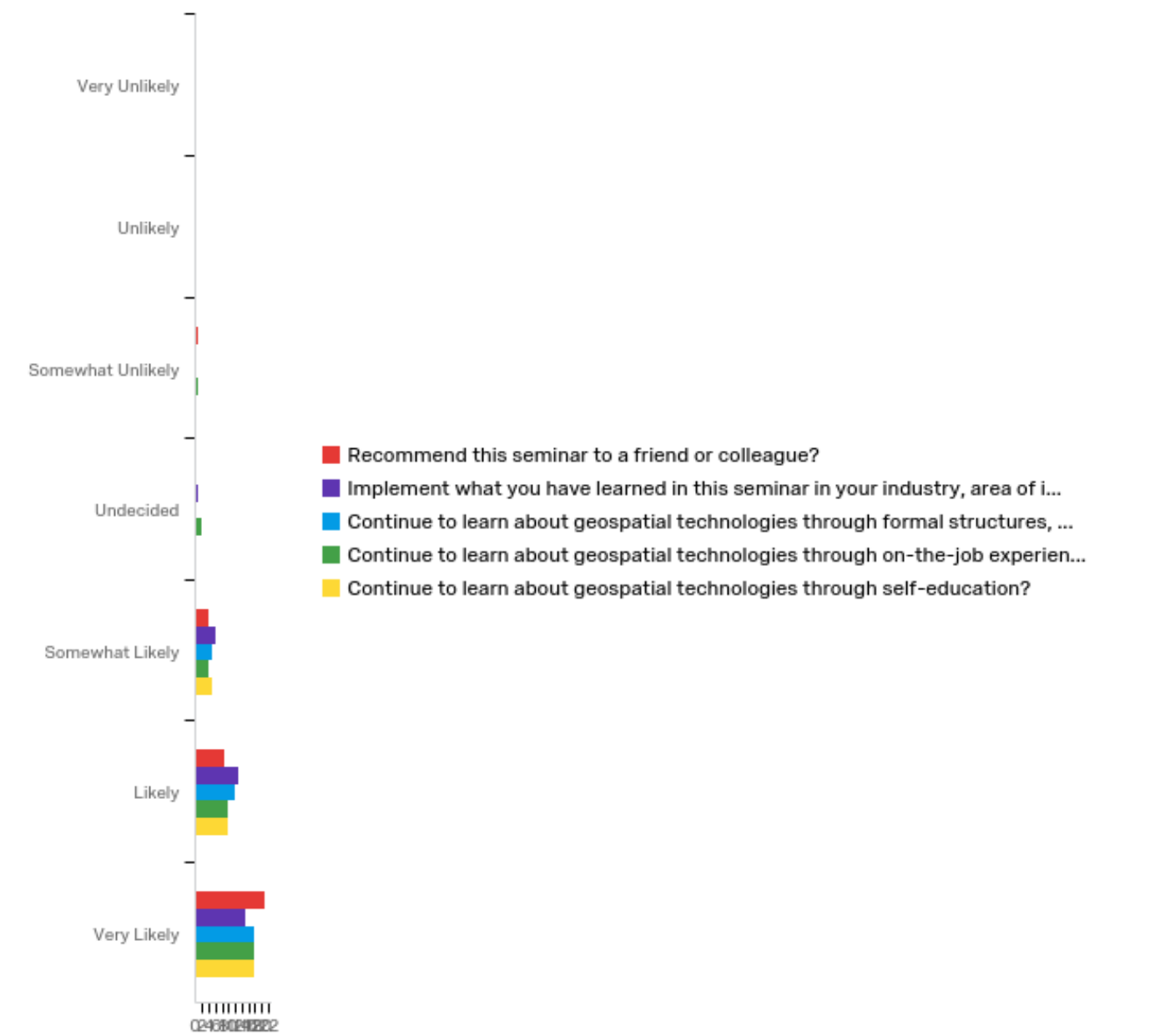
#	Question	Very Unlikely		Unlikely		Somewhat Unlikely		Undecided		Somewhat Likely		Likely		Very Likely		Total
1	Recommend this seminar to a friend or colleague?	0.00%	0	0.00%	0	2.86%	1	0.00%	0	11.43%	4	25.71%	9	60.00%	21	35

#	Question														Total
2	Implement what you have learned in this seminar in your industry, area of interest, or area of expertise?	0.00%	0	0.00%	0	0.00%	0	2.86%	1	17.14%	6	37.14%	13	42.86%	15	35
3	Continue to learn about geospatial technologies through formal structures, like courses or workshops?	0.00%	0	0.00%	0	0.00%	0	0.00%	0	14.29%	5	34.29%	12	51.43%	18	35
4	Continue to learn about geospatial technologies through on-the-job experiences or internships?	0.00%	0	0.00%	0	2.86%	1	5.71%	2	11.43%	4	28.57%	10	51.43%	18	35
5	Continue to learn about geospatial technologies through self-education?	0.00%	0	0.00%	0	0.00%	0	0.00%	0	15.15%	5	30.30%	10	54.55%	18	33

Q28 - Did participating in this professional development workshop impact your curriculum?

Did participating in this professional development workshop impact your curriculum?

Yes

I many ideas to use GeoSpatial Mapping to enhance my lessons.

Yes. I plan on using it as a collection tool in my biology classses

Yes

Yes

Yes

yes

Yes

Yes

Yes

Yes

Yes this will impact my curriculum.

yes

Yes

unsure

yes

yes

Yes

yes

yes

yes

yes

Yes

Yes

Yes

Yes

Yes absolutely!

Somewhat. It will be a little difficult in field of SpEd, but I am going to try!

Definitely!

yes

Yes

yes

Yes

Yes, it added another method of using technology that I can use with my students.

Yes.

Q29 - Did participating in this professional development workshop support any research activity?

Did participating in this professional development workshop support any research activity?

No

Yes

Yes I plan on using it with eBird and monarch studies

No

no

Yes

yes

No

No

Yes

Yes

Yes my students will use this to learn mapping skills.

Yes

Yes

no

not yet

yes

Yes

yes

yes

yes

yes

Yes

Yes

Yes

Yes

Yes it did!

yes!

It will be of great use when my students begin working on their projects.

no

Yes

yes

Yes

Not so far.

Yes.

Q30 - Has your experience with geospatially-augmented instruction helped you develop marketable skill sets? Please explain.

Has your experience with geospatially-augmented instruction helped you develop marketable skill sets? Please explain.

Yes

I don't think I could get a job with what I learned.

Yes, I have a new graphing tool to use with data collecting

Yes

na

yes able to use data and map to illustrate for students

Yes

Yes to help students understand about the real world use of this and how these skills will help them get a job

Yes

Yes- I think being educated in this makes you more hireable

Yes this will help me with marketing my skill sets.

Yes and No. I will still need to research how this will help in my classroom

no

not sure

yes

Yes, the ability to incorporate data from other sources into maps.

yes

I can use this to teach my students a new skill

no

Yes. I feel like I can take what I've learned back to my classroom to help make subject matter for relevant for my students.

Yes, I can use it in the future

Yes

Yes, it allows for me to expand my knowledge in a different field and how to incorporate information differently

Yes

Yes I believe that having this training will provide a skill set that not many agricultural educators have. With my prior background with NASS it makes it an exceptional tool to add some of those skills I obtained from NASS.

I believe so. I feel a bit more tech savvy now! :-)

Probably, but moreso that I will be imparting those skill sets to my students, who will become more marketable.

no

Yes

not sure

No

Partially, before I'd be confident in using it for my livelihood I would need more training.

No. I do not yet understand how the skills I learned of in this workshop might be applied to my work.

Q31 - Which part of the professional development workshop was most valuable to you?

Which part of the professional development workshop was most valuable to you?

Adding additional layers to maps, analyzing various features, and additional lesson plans for supplemental lessons.

Story Maps, Data Locations

The whole program was useful

How to use the technology in curriculum

Story Map

Lessons to be able to actually use with my age students

arcgis map

The practice time

All of the great online tools/products

Yes

Learning how to make science seem cooler and get the students involved without doing PowerPoint

The survey 123 will help me with my curriculum.

The step by step work through of how the applications are used

The step by step usage of the tools that are available.

Survey123

survey 123, story lines

all

Exposure to the multitude of tasks capable with arcGIS and handson experience implementing it.

all

How to add layers to the map

every part

Honestly, all of it was valuable.

data

The

How to take from one site and incorporate into the map

All of it

arc-gis mapping and the story maps.

I loved the story maps!

The demonstration and the opportunity to work one-to-one with one of the instructors on projects that I am currently involved with.

Just getting general knowledge about geospatial technologies and how you create maps.

Story Maps

lesson making using the esri/gsi surface

Beginning and end

Learning to make story maps.

Resources.

Q32 - Which part of the professional development workshop was least valuable to you?

Which part of the professional development workshop was least valuable to you?

The limited time for hands-on.

N/A

None

It was all wonderful

na

N/A

Some things were above the level of my students but I still enjoyed learning about it

Yes

Nothing! I got a lot out of it.

N/A

When we weren't doing things ourselves

The complex aspects of layers

not sure

It was all relevant and could be extended.

all

?

NA

NA

The access to GIS account.

Na

None

I thought it was all valuable but in terms of what was an already available knowledge, the survey123 was least valuable because there are other ways to perform surveys in the classroom.

Researching things such as lava flow. I understand we were working on how to use the system, but that part was a little tough to sit through.

n/a
none
na
Middle part
I'm not sure, maybe the application of market research.
Mathematical data.

Q34 - What additional elements would you like to see incorporated in future professional development workshops?

What additional elements would you like to see incorporated in future professional development workshops?
None for now.
Have a paper copy of the project
I don't know
Coding
na
More field work
More practice of same tools
Yes
N/A
N/A
More geared towards lower grades
more of same
story maps
More guided practice.
none
letting us work on our own projects while you help us is great
?
NA
N/A
Na
Not sure
I think the current elements are good I just think that there needs to be more levels of training so after you get the basics you advance. I would like to have some training where I sit down and work on projects but have someone right there to help.
More relevancy towards curriculum. Maybe break it up into grade levels.
More on using Collector.
n/a
none at this time

advanced course for second year people

Nothing

Not sure

Literacy goals.

Q35 - What, if anything, would you change about the professional development workshop?

What, if anything, would you change about the professional development workshop?
nothing
A follow-up workshop
nothing
na
Closer to NE Arkansas
n/a
Yes
I wouldn't change anything. It was great.
Nothing
More geared towards lower grades
nothing
nothing
A follow up or refresher course.
nothing
nothing
nothing
NA
NS
N/A
None
I would provide guided notes to students. I know that the weblinks are great for some but I need to stay busy during lectures. I would like to fill in the blank etc.
See Q 33 & 34
nothing
More variety of instructors
none at this time
maybe have a detailed instruction sheet on how to do the steps

It needs to be simplified.

More time to create things to use in my classroom.

I would like to see more variety in presenters and in the availability of learning materials.

Q36 - Do you have any additional comments or suggestions?

Do you have any additional comments or suggestions?

The workshop was very helpful. The presenters were knowledgeable and professional.

no

Love this workshop and it usefulness in my classroom

na

Malcolm Williamson and Hanna Ford were exceptional! Very Helpful and encouraging to all of us! Very knowledgeable staff people!

No

Thank You so very much for the opportunity!

No

N/A

N/A

So Much Better!!!!!

More geared towards lower grades

no

This was my first exposure to incorporating GIS into classroom instruction. The multitude of uses are overwhelming. I'd love to see projects other instructors create using this information.

no

thanks for this!

no

No

No

Very please with the facilitators.

No

I really enjoyed the last day where we got to work on our own projects and actually apply them.

Thanks for bringing this information to us!

nope

none at this time

no

Na

I enjoyed it!! I learned a lot.

N/A