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Canadian Society for Medical Laboratory Science
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Recent Graduate's Clinical Placement Experience

Within Medical Laboratory Science Programs across Canada

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Purpose

Voiced by recent graduates, the purpose of this study was to examine the student experience during the clinical practicum of medical laboratory science programs (Medical Laboratory Technologists and Medical Laboratory Assistants/Technicians; MLTs and MLAs) across Canada.

As Phase 1 of a larger initiative, the overall goal of the project is to examine the structure and usage of simulation in relation to clinical placements within Canadian medical laboratory science programs (MLT and MLA). This work will set the foundation for Phase 2 – a constructive national discussion with educators, which will include an evaluation of the current clinical placement system as well as determining the value of simulation to enhance this experience.

Significance

As stakeholders in the clinical practicum experience, recent graduates provide a frontline understanding of how students are directly impacted by the quality and degree of clinical exposure during their training. There have not been any recent studies examining the thematic benefits, challenges, overall satisfaction and employment impact of this experience for medical laboratory science students at a national level.

Methodology

The study utilized a descriptive design, providing the participants the ability to respond in quantitative and qualitative formats within the online survey (French and English). The survey requested minimal demographic information including sex, province/territory of clinical placement(s), certification type, year of graduation and employment post-graduation. The main body of the survey used a 4-point Likert scale ('strongly agree' to strongly disagree'; no neutral score) to answer satisfaction-based questions about recent clinical practicum experience. Each question was followed by a comment section for the participant to discuss their response if they wished to do so.

Participants

A list of MLA and MLT graduates who had successfully passed the CSMLS certification exam between 2011 and 2015 (N=5209) was used in the recruitment process to identify potential participants. Of these, 42 emails were rejected or bounced, 29 participants did not complete the satisfaction related questions (These respondents may have completed their clinical placements outside of Canada), and six participants indicated that their clinical placements occurred prior to 2011 (n=5167).

Results

Demographics

A total of 483 recent graduates completed the study survey. The 9% (458/5167) participation rate is representative of the certified medical laboratory population (95% confidence interval, 5% margin of error). There were 160 MLAs and 323 MLTS (includes 15 Clinical Genetics Technologists and 16 Diagnostic Cytotechnologists), representing 67% and 33% of the sample respectively. Respondents' answers were mainly completed by females (81%, 390/483) with males representing 16% (79/483), and transgender (0%, 1/483) or preferring not to disclose this information (3% (13/483) as the remaining results.

Participants represented a decent distribution of years in which they completed their clinical placements, with a slightly greater focus on more recent years as indicated in the table below.

Table 1: Clinical Placement Year Distribution

Clinical Placement Year	# of Participants	% of Total Participants
2010	6	1%
2011	69	14%
2012	73	15%
2013	89	18%
2014	111	23%
2015	135	28%
Total	483	100%

There was also a relatively representative distribution of clinical placement experiences by provinces/territories associated with educational program locations.

Table 2: Clinical Placement Location Distribution

Clinical Placement Location	# of Participants	% of Total Participants
Alberta	82	17%
British Columbia	54	11%
Manitoba	31	6%
New Brunswick	31	6%
Newfoundland & Labrador	15	3%
Nova Scotia	17	4%
Ontario	213	44%
Prince Edward Island	5	1%
Quebec	21	4%
Saskatchewan	12	2%
Multiple Provinces/Territories	2	0%
Total	483	100%

Given the high number of participants who had recently completed the exam and the time of the survey distribution, it is not surprising that 84% (407/483) of those who participated in the survey indicated they were or had been employed in a job at their certification level. The majority of the group was MLA certified (82%, 62/76). Forty-six percent (35/76) of respondents who were not working in a job at their certification level, completed the exam in 2015.

Clinical Placement Experience

I feel that my academic program prepared me for my clinical placement.

Recent graduates indicated that their academic programs prepared them for clinical placement. A staggering 95% (457/483) of participants had a positive score (31% somewhat agreed, 64% strongly agreed; disagreement rate = 5%). Some differences were noted between the MLT and MLA groups as shown in the Graph 3. MLTs had a higher agreement level with more participants indicating 'strongly agree' to the question than MLAs.

I feel that my academic program prepared me for my clinical placement.

	MLT	MLA
■ Strongly Agree	69%	54%
■ Somewhat Agree	26%	40%
■ Somewhat Disagree	3%	4%
■ Strongly Disagree	2%	2%
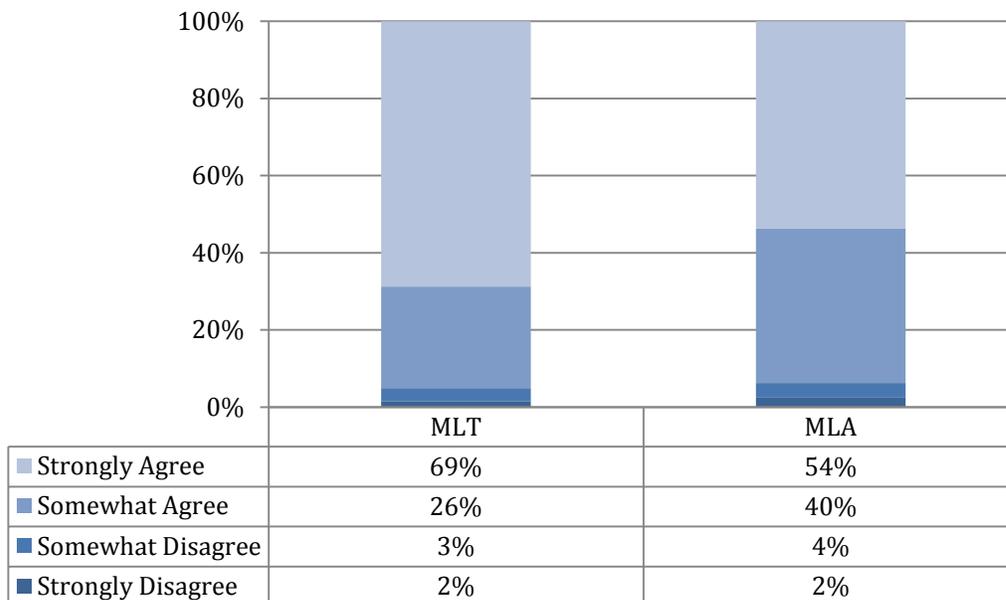
Participants were provided with the opportunity to comment on their response (for each question asked in the survey). There were 74 comments provided for the question associated with clinical placement preparedness. Consistent with the respondent agreement level, thematic analyses provided positive results such as, "[The college] was an excellent school to attend", "My academic program was absolutely focused and amazing", and "…simulated clinical was especially helpful". Participants also used the comment section to discuss where they felt improvements could be made. Improvement themes focused on decreasing the amount of theoretical learning, increasing the practical/hands-on learning, and a noted difference between what was taught and was what practiced in the clinical environment.

- "We received little or no practice at school with cell counting analysis for things like body fluids and sperm analysis. While this is definitely due to the limited availability of these specimens for school programs, it would have been helpful…"

- "School did a good job of preparing me for the theory that is used behind all the testing and to help interpret results, however we were not given enough experience with different machines to be comfortable in the real world lab."

- "The amount of theory I had to learn was unnecessary to prepare me for the work of a MLT."

- "There are "Ideal" situations that you learn about in class, but then when you get to placement you see the reality."

- "Even though it teaches you the basics it doesn't teach you the critical thinking that is needed."

Participants did recognize the need for theoretical learning, as in this comment, "It is always different while you are doing the in class work, and it's all theoretical. But it is good that we have clinical placements that helped me understand more what it is they are doing in the real job." They also recognized the practical concepts associated with costs and technological advances as mentioned in previous comments.

Overall, it should be noted, that the participants were not 'complaining' (indicated in tone and structure of responses). Eighty-five percent (63/74) of the comments were associated with students who provided positive scores, such as the examples provided above. Instead, it can be interpreted that the graduates were providing their experiences and suggestion that increasing the degree of exposure to real life workplace scenarios may be beneficial prior to clinical placement and that decreasing the theoretical component to incur this, may be acceptable.

My clinical placement educator(s) and setting provided me with the technical skills I required.

Although respondents discussed wanting more practical skills in the previous question, they did indicate a high level of positive agreement with receiving technical skills training in the clinical placement setting. Overall, 93% (449/483) demonstrated agreement, with 29% (142/483) 'somewhat agreeing' and 64% (307/483) 'strongly agreeing' (disagreement rate = 7%). Again, this agreement level was more positively skewed for MLTs than it was for MLAs.

Graph 4: Technical Skills Training

My clinical placement educator(s) and setting provided me with the technical skills training I required.

	MLT	MLA
Strongly Agree	68%	54%
Somewhat Agree	26%	36%
Somewhat Disagree	4%	8%
Strongly Disagree	1%	2%
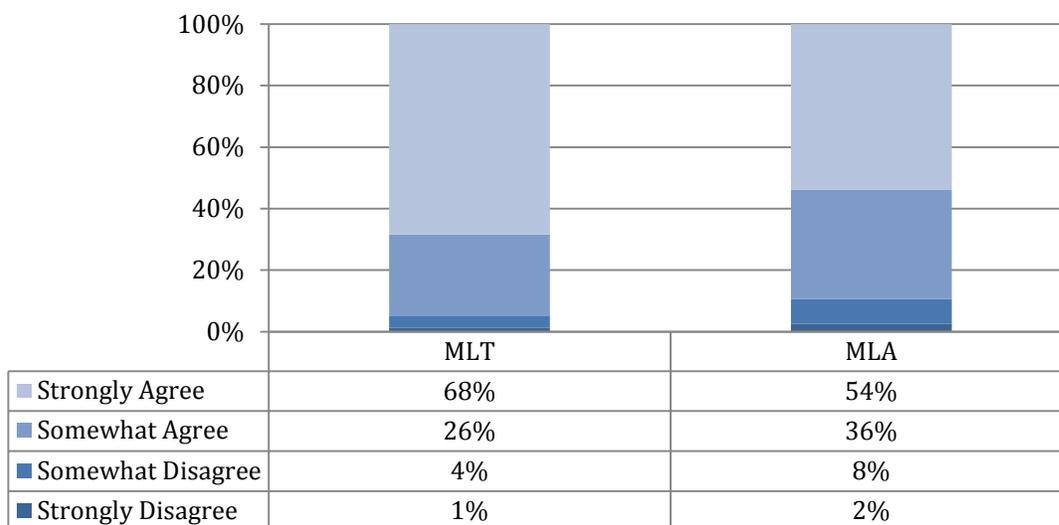
Of the comments provided, 84% (49/58) were derived by recent graduates who positively agreed to the associated technical skills question. Two polarized themes arose, a negative experience (inappropriate staff or work) or a positive experience (excellent training and staff).

Negative experience comments centered on the clinical staff (supervisors, instructors and other lab workers) not wanting to teach students (lack of desire or burnout), not being able to teach appropriately (lack of time or adequate staffing), and not being provided with appropriate work (administrative or grunt work). Given these recent graduates mainly approved of their technical skills training, the majority of comments were situational in nature or focused on particular staff rather than a systemic issue. Regardless, the comments were direct and descriptive enough (tone, language, and details provided) to indicate a high level of negative impact on the clinical placement experience. Due to this, a greater number of examples have been provided below.

- "The staff was already overworked before the students arrived. When we arrived they had even more work added to their day. I felt like no one had time to really explain procedures let alone show us how to do things correctly."

- "I found they didn't have the time to spend with me and were understaffed. I also heard one of the other phlebotomist say that she did not want to have students."

- "I was left fairly unsupervised with no direction for 2 weeks in one of my rotations because my placement educator was off, and nobody stepped up."

- "Some educators were staff who made it known that they were not happy about having students. Most of the time I had preceptors who had gone through a training program to teach students, but not all sites had staff trained for this."

- "I would have liked to get more practical experience, perhaps a longer placement to better hone my skills. It seemed like I just started to really adjust to working in this field and my placement was over."

- "I was placed in a walk-in clinic which focuses more on administrative duties."

- "I attended a different hospital for each of my 3 clinical rotations; although there were skilled preceptors, they were rare. Generally speaking, I and my peers were treated as general duty assistants and used to perform mundane tasks such as cleaning…"

Although negative experiences occurred, there were a large number of participants who wanted to highlight the positive ones they had. Comments for these experiences focused on particular staff members or clinical instructors who supported the student. Participants also recognized that staffing shortages impacted the level of support they received and that this component was out of the control of the clinical instructors (people skills was within the ability of staff to change).

- "They care deeply about their students; create interactive and comprehensive course material; maintain close contact with students; and are knowledgeable about their field."

- "They tried their best given the instructor : student ratio."

- "I was given adequate time in each department and thorough training as requested by my clinical coordinator at school."

- "One clinical educator was consistently available and made a point to meet with me weekly to go over my progress and answer any questions or concerns that I had."

- "The educators were realistic as to what knowledge was necessary for work and what was just for passing the CSMLS exam."

In reviewing all comments, it is unclear whether the students had an outlet to provide feedback (positive or negative) to their educational programs or clinical sites. Given the absence of this information from the descriptions, it may be appropriate for educational programs to review the communication pathways between students, clinical sites and educational programs, in addition to the timing of these cycles (pre, peri, and post clinical placement) and students' awareness of such processes.

My clinical placement educator(s) provided me with the practical skills training I required. For example, soft skills such as professional communication and appropriate workplace conduct.

Practical skills training, such as soft skills, may not be as obvious a form of learning students experience during clinical training in comparison to technical skills. It is likely that for many education programs this is a byproduct of the students interacting in the clinical environment. Comments to support this include; "I don't think I've ever seen anyone provide training as the soft skills listed, in my training or any of the subsequent students.", "Soft skills are not learned on practicum, they are learned behaviours throughout life.", and "I don't think the educators per se provide me with the soft skills. You gradually improved your professional communication through observation and interaction with co-workers."

If this is the case, the higher level of disagreement with the practical skills training statement may not be surprising. Eighty-eight percent (423/483) agreed positively with the practical skills training they received (disagreement rate = 12%). The distribution of scores between MLAs and MLTs were more closely mirrored than in any other satisfaction based question.

My clinical placement educator(s) provided me with the practical skills training I required. For example, soft skills such as professional communication and appropriate workplace conduct.

	MLT	MLA
Strongly Agree	52%	51%
Somewhat Agree	35%	38%
Somewhat Disagree	11%	8%
Strongly Disagree	3%	2%
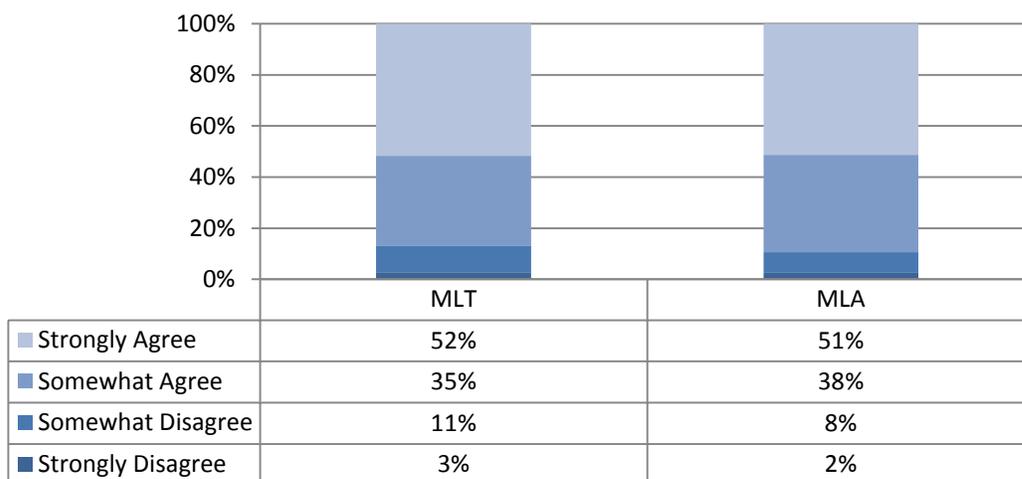
There were 43 comments in this section with 62% (27/43) from positive responders. Analysis revealed two main comment themes, a focus on the lack of soft skills associated with laboratory staff (e.g., gossiping, unprofessional behaviour, bullying) and a lack of soft skills training in the educational program (mixed responses on whether this was appropriate or not).

- "There is workplace harassment and calling names, and bullying, even at school, I am shocked and traumatized!"

- "There was unprofessional "gossip" in my presence on many occasions. Employees would routinely complain about other workers and the employer."

- "As a former manager in my first career, I was shocked at the lack of diplomacy and professionalism demonstrated by the designated clinical "educators." They were obviously appointed due to availability [versus] suitability."

- "Some sections (hematology & transfusion), were rampant with dissatisfaction and bullying. I witnessed techs being spoken to in a manner that was inexcusable, and unwarranted."

- "What they teach you in class does not work in the actual workplace. If you speak up you are considered a problem."

Graduates recognized the situation nature of such occurrences. For example, "Some people were great at communicating what was appropriate, but some people lacked these skills themselves." Other's pinpointed excellent experiences and provided praise to the clinical placement staff.

- "[The] hospital completely embraced me and provided me with challenging opportunities that developed various skills such as communication and professional conduct."

- "Clinical educators lead by example. They encouraged me to interact with professionals outside of the main lab, such as genetic counsellors and obstetricians."

- "They set up situations which you would cross in the real world and having to use the proper SOP to do the work"

As in technical skills training question, participants did not comment on the communication pathways used to report positive or negative experiences. Although the lack of information in this regard does not indicate a problem, it highlights an area for inquiry.

The quality of the equipment I used at my clinical placement was satisfactory.

Satisfaction with the equipment used during clinical placement received the highest 'strongly agree' percentage than any other satisfaction based question (67%, 322/483). Total positive agreement was 95% (460/483; disagreement rate = 5%). MLAs showed a greater negative skewing of their responses than MLTs, albeit the results still indicate a high level of satisfaction.

Graph 6: Equipment Quality

The quality of the equipment I used at my clinical placement was satisfactory.

	MLT	MLA
■ Strongly Agree	69%	61%
■ Somewhat Agree	28%	30%
■ Somewhat Disagree	2%	6%
■ Strongly Disagree	1%	3%
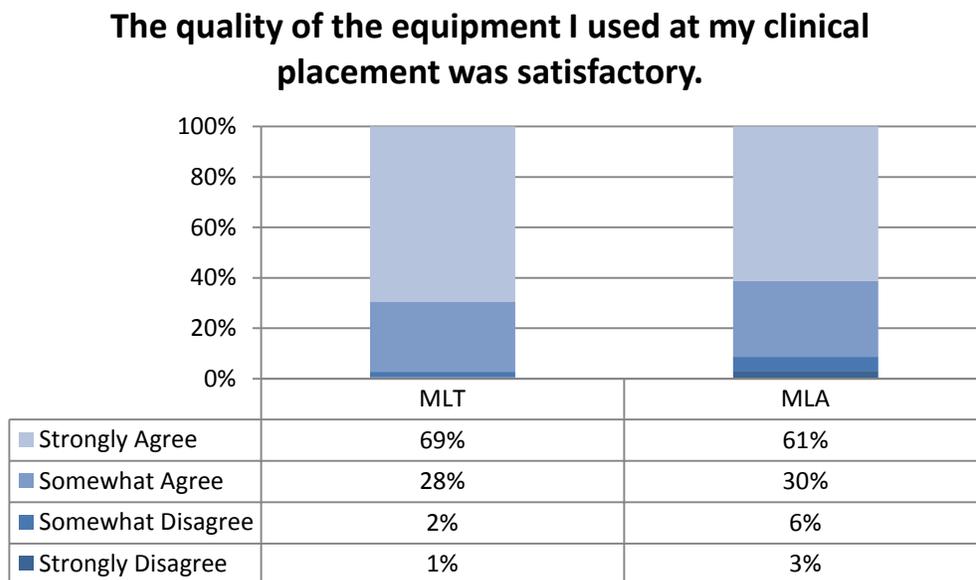
Positive responders provided 68% (23/31) of the comments. There were varied responses as to whether the graduate had been able to use the same equipment as the staff or whether they were provided with 'lesser' equipment to practice on. It is unclear if divergent experiences are associated with appropriate or inappropriate expectations of the graduate. It may warrant a review by local programs.

Generally, responses indicated adequate equipment use, whether it was old or not as reflected in this comment, "I was placed at a smaller hospital, and while I didn't have access to the latest and greatest in laboratory equipment, that which was available to me was more than enough to learn from, and to get the job done." Examples of lesser satisfaction are provided in the following comments:

- "It was old, outdated and often expired but it wasn't completely out of touch with what we use in clinical settings and it gave me a good basis on how to fix things or how to use older methods when new instrumentation broke clinically."

- "Many of the analyzers, especially the Hematology Beckman Coulter was very old and always broken down and required many man hours and troubleshooting."

- "The microscopes supplied for students barely work. I understand they are expensive but doing 100 differentials on a microscope you can hardly decipher a dohle Body on seems a little like a waste of time."

- "I did not have access to a computer so my experience with the laboratory information system was limited. It would have been useful to learn how to navigate patient histories, practice preparing reports, and compare my findings…"

I had safety concerns for myself or others during my clinical placement(s).

This statement is negatively worded and thus, a response of 'agree' denotes dissatisfaction. Graduates indicated the highest level of dissatisfaction associated with safety concerns in comparison to any other question. Overall, 21% (101/483; 10% strongly agreed, 11% somewhat agreed) experience or were aware of safety concerns in the clinical placement setting (79% did not have safety concerns). MLAs were highly likely to report safety concerns as represented by the 35% of individuals indicating agreement.

I had safety concerns for myself or others during my clinical placement(s).

	MLT	MLA
■ Strongly Disagree	58%	41%
■ Somewhat Disagree	28%	24%
■ Somewhat Agree	7%	20%
■ Strongly Agree	7%	15%
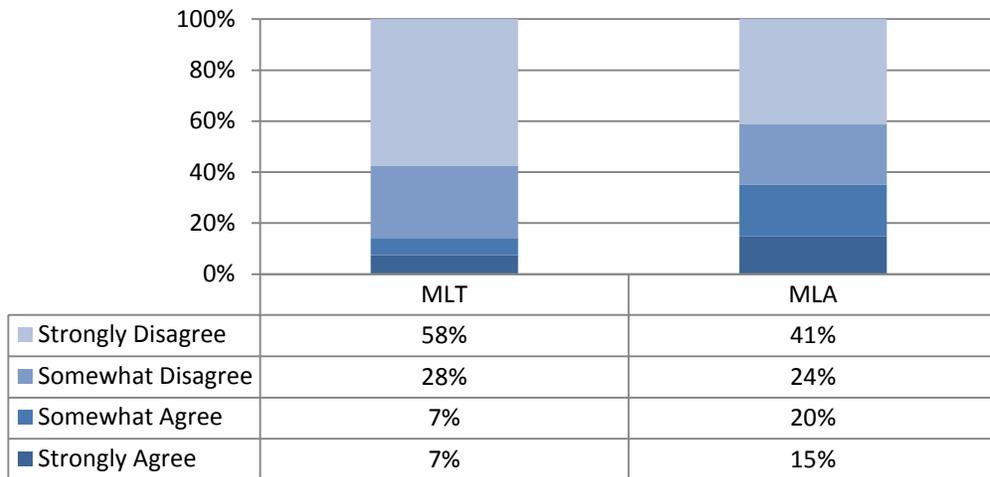
A reference point was made in the comments, "Safety is always a concern where power imbalances exist, and the preceptor/student relationship is an excellent example." Keeping this in mind and reference to the other questions, of the 37 comments made 62% (23/37) were by those who were dissatisfied. In these comments there was a clear division of good examples associated with not experiencing safety issues and negative descriptions made by those who were in unsafe situations.

Positive comments included:

- I always felt safe during my practicum. Staff went out of their way to ensure I was wearing PPE appropriate to the task.

- Our practicum rotations were completely professional and we followed the standards set forth by the clinical labs.

- Safety was paramount at all times, especially for students.

Negative comments included descriptions of needle sticks, a cut to the skin, creation of toxic chemicals resulting in injury while under supervision, poor ventilation causing headaches, environmental allergens causing reactions and the contraction of a disease due to workplace stress. In all cases, the graduate discussed the lack of safety at the clinical site and/or appropriate supervision by clinical staff. Comments stated or alluded to a lack of reinforcement for safety measures (cutting corners) in the name of limited time or general practice scenarios.

- Exposed to way too many chemicals in the name of cutting corners and increasing production. Very unprofessional.

- The safety practice of older generation lab personnel...is not on the same par as new graduates ...I believe that all lab personnel should retrain for safety on a regular basis.

- I had a preceptor for a couple days that rushed me through collections. I felt like she cut corners and it wasn't appropriate for a learning environment. (All of my other preceptors were fine, though.)

- Myself and others, did not receive appropriate training for discarding chemicals in histology even though it was required of the students.

- All of the Micro MLTs worked without gloves and subtly discouraged my own choice to wear gloves, even after one had a finger infected…

Note that the concept of not wearing gloves was frequent and some graduates were specifically told by staff not to wear them.

- The protocols for needle stick injuries were vague and outdated on site. When it was brought to the attention of management it was taken care of (unfortunately this was due to the injury of a coworker).

Given all of the comments provided in this study, the concept of safety concerns should be targeted as a priority for Colleges/Institutes to review, especially for MLA programs.

Overall, I feel that the experience I received during my clinical placement(s) prepared me for a career in my profession.

Ninety-two percent (444/483) of graduates felt prepared to enter the workforce after their clinical placement (67% strongly agreed, 29% somewhat agreed), resulting in 8% (39/483) disagreement. There was, again, marked differences between MLTs and MLAs and may be associated with less MLAs being employed at their certification level at the time of the survey. Of the MLAs, 16% (25/160) did not feel prepared for the workforce, whereas only 4% (14/323) of MLTs felt this way.

Graph 8: Preparation for Career

Overall, I feel that the experience I received during my clinical placement(s) prepared me for a career in my profession.

	MLT	MLA
Strongly Agree	71%	51%
Somewhat Agree	24%	34%
Somewhat Disagree	2%	10%
Strongly Disagree	2%	6%
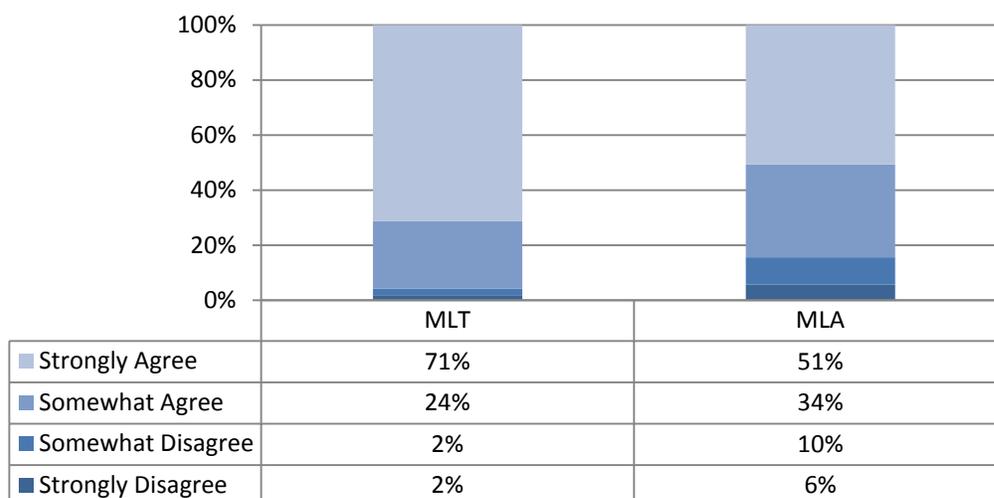
Fifty-one comments fostered information to better understand the reason for workplace preparedness or not (83%, 42/51 were completed by positive responders). Positive experience comments reflected the impact good instructors can have on student experience.

- "I really enjoyed my practicum and I feel I learned many things relevant to my profession. It was an essential part of my education and has allowed me to be a better MLT."

- "Practicum was the best part of the program, you actually got a feeling for what you would do as a lab tech and what you did and didn't like."

- "The academic and clinic placements were excellent. The nature of the job requires months of hands-on experience."

- "The academic institution I attended had a period of "simulated clinical" within the school and then a period of actual clinical. Although the simulated clinical was beneficial in helping to prepare students to work in a real clinical setting…"

- "I believe the clinical placement prepared me more for my career than the classroom/theoretical portion of the program. I learned a lot more when actually in the lab observing and performing tests."

Negative experiences featured a lack of appropriate work for training purposes, and staffing personality issues (stress, burnout).

- "Clinical site only included rotations in histopathology. I didn't get any work related experience in chemistry, hematology or microbiology. I didn't get an opportunity to perform any phlebotomy which is a big part of what an MLA does."

- "Technically I came out of school competent, though they should have taught students how to multitask. So much emphasis was put on doing one bench at a time that I found it difficult transitioning to a lab where I work independently at several disciplines."

- "The lab where I completed my placement referred out many important tests (for example: antibody investigations) that should have been part of my clinical training experience. In addition, there were no practice materials to reference or learn off of."

When asked if the graduate "would recommend the clinical placement site(s) as a place to learn for future medical laboratory science students", overall 87% (18/482) answered 'yes'. There was a substantial difference in this response, however, between MLTs and MLAs. Although 92% (298/323) of MLTs would recommend their clinical placement, only 75% (120/159) of MLAs would in comparison.

Conclusion

General satisfaction for clinical placement preparedness and onsite training are high, meeting student demands in regards to their technical and practical skills, and ability to practice skills on quality equipment. Consideration to increasing the practical learning prior to clinical placement would be beneficial for students (e.g., practice with equipment, simulated learning, practice of soft skills). Less satisfaction held by graduates when asked about safety concerns they experienced, indicating an area for further review. Overall, educational programs and clinical placements should be proud of the environments they have created which nurture student learning. The comments and suggestions provided in this report reflect the strong system that has been built and only provides areas for consideration to enhance the student experience by tailoring to their current needs.

Participant comments provided contextual richness and a perspective on the negative situations graduates experienced during their clinical placements (even though the general experience was positive). The data reflects the human health resource shortages currently being experienced by the medical laboratory profession. With the increased stress and burnout associated with the change in staffing and workload models, the added complexity of monitoring students can cause additional burden to the instructors and clinical placement sites. These factors have started to come to the surface and are likely impacting students, with projections for this to increase given the evolution of the health care system.

Educational programs and clinical placement employers are encouraged to review these results and support each other, in collaboration with students/graduates, to review current stakeholder needs, evaluate communication pathways for reporting positive and negative experiences, and determine new models of education and clinical placement models that reflective today's needs.