

Innovations in Dental Hygiene Education

Legislative Advocacy: Undergraduate and Graduate Student Learning Outcomes

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Abstract

Purpose: Legislative advocacy provides an avenue through which oral health disparities and alternative methods of delivering oral health care to underserved populations can be addressed. The purpose of this study was to assess advocacy knowledge, values, actions and perceived barriers of undergraduate and graduate students enrolled in a leadership course with a Legislative Advocacy Project (LAP).

Methods: A pre-test/post-test online questionnaire was administered to a convenience sample of undergraduate and graduate dental hygiene students to measure advocacy knowledge, values, and actions resulting from participation in a LAP (n=38). Descriptive statistics assessed the average responses of perceived barriers. Two open-ended questions asked about participation in advocacy and providing feedback regarding the LAP.

Results: Both groups (undergraduate, n=25; graduate, n=13) demonstrated a statistically significant change from the pre-test/post-test assessment of knowledge, values, and actions ($p<0.001$). No statistically significant differences were identified when comparing undergraduate and graduate level responses, pre-test and post-test scores and undergraduate and graduate level responses, and perceived barriers. The three greatest barriers were lack of time to participate in legislative activities, lack of comfort speaking to legislators and testifying before legislators. Responses to the open-ended questions suggested learning in the three lower levels of the affective domain.

Conclusion: Knowledge, values, and actions were increased following the LAP. Strategies to address ongoing barriers should be implemented in advocacy curricula. The LAP was influential in integrating cognitive knowledge and changing receiving, responding, and valuing levels of the affective domain. An Affective Advocacy Model was developed based on the analysis of responses to the open-ended questions and current literature.

Keywords: dental hygiene students, dental hygiene education, advocacy, legislation, leadership, learning domains

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Introduction

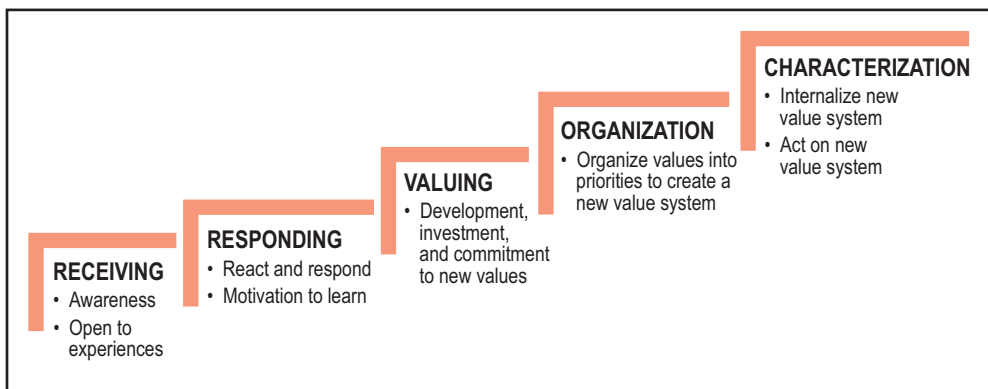
Legislative advocacy provides an avenue through which oral health disparities and alternative methods of delivering oral health care to underserved populations can be addressed. Experiences in advocacy for dental hygiene students offers a pathway for the promotion of oral health in all populations. A seven-week Legislative Advocacy Project (LAP), that involved assessment, planning, implementation, and evaluation, was incorporated into the curriculum for undergraduate and graduate dental hygiene students.¹ This LAP encouraged students to enhance knowledge about advocacy, value the process of advocacy, and encourage behavior changes about advocacy actions.

During the assessment stage of the LAP students learned about the legislative efforts of the state's dental hygiene professional association, the role of the state association lobbyist, the state legislative system, and legislators as policy decision-makers. Also, student's chose a health bill to follow through the legislative process and identified potential collaborators and opponents to this legislation. During the planning stage students developed a strategic plan to contact legislators in support or opposition of the bill. The implementation phase involved contacting the legislator while following the bill through the legislative process. In the evaluation stage the strategic plan outcomes and effectiveness of the LAP were assessed.¹

Education for students in the oral health professions includes the three domains of learning: cognitive, affective, and psychomotor. The LAP objectives were designed to guide the process of this educational unit and focused on the cognitive domain of learning. Cognitive learning is an important context in classroom instruction whether it be face-to-face or in an online learning format. The original 1956 cognitive taxonomy developed by Bloom and associates was revised by Anderson and associates in 2001.² The revision reflects a hierarchy of verbs rather than a hierarchy of nouns as in the original version emphasizing that learning is an action.^{2,3} The hierarchy of actions include, beginning with the lowest level: remembering, understanding, applying, analyzing, evaluating, and creating.³

As well as providing cognitive acquisition of knowledge, education in oral health programs addresses values, beliefs, and attitudes that are within the affective domain.⁴ Affective learning is also a hierarchical process where the lowest level, receiving, is followed by responding, valuing, organization, and characterization (Figure 1).⁴ This type of learning is complicated to assess in the educational setting because it integrates cognitive knowledge, feelings, and behavioral changes.⁵ Affective learning requires a form of transformational experiences to create self-exploration and a change in one's values.^{6,7} Having learners engage in characterization, the highest level of this domain, represents action and change in behavior based on the learners' newly formed value system.

Figure 1. Affective Domain



Previous research demonstrated an increase in dental hygiene students' knowledge, values, and actions after participating in the LAP.⁸ Anecdotal responses from participants reflected learning at the lower levels of the affective domain: receiving, responding, and valuing. Participant responses indicated increased political awareness, increased personal efficacy, and valuing one's voice.⁸

Another investigation regarding the advocacy actions of dental hygiene alumni who had completed the LAP during their graduate and undergraduate education was also conducted.⁹ Results showed a significant difference for participation in legislative efforts prior to and after the LAP; however, the implementation of advocacy actions was challenging due to competing barriers. Participants reflected a strong desire to engage in advocacy actions demonstrating "valuing" in the affective domain. Participants acknowledged experiences with underserved populations, the impact on one's career, or importance of an issue to dental hygiene. Importance and passion were identified as key triggers to engaging in advocacy action.⁹

A third study about advocacy actions of dental hygiene practitioners engaged in improving access to care was conducted.¹⁰ Improvements to oral health equity

were addressed through three key elements: 1) learning and educating, 2) critical awareness and empowerment, and 3) individual and collective action. The interaction within and among these components generated the energy to fuel the momentum needed to sustain the social action to improve oral health. The learning and educating element of this theory, Synergy in Social Action, is within the cognitive domain while critical awareness and empowerment represent the affective domain.¹⁰ This awareness and empowerment fuels individual and collective action. Study participants organized and prioritized a new value system based on experiences and advocacy for disparate populations that resulted in advocacy actions on a regular basis.¹⁰

Each of these research studies suggested that learning in the cognitive and affective domains occurred either through a planned curriculum or as a result of practitioner experiences to create awareness. Affective learning, resulting in awareness was created and current value systems were examined and reorganized into new value systems to guide advocacy actions. The purpose of this descriptive comparative study was to evaluate the knowledge, values, and actions before and after the LAP and the perceived barriers to participation in advocacy efforts.

Methods

This study was granted exempt status by the Idaho State University (ISU) Institutional Review Board. Dental hygiene students from the ISU Bachelor of Science and Master of Science degree programs were the convenience sample

for the study. A questionnaire was administered to undergraduate level students (n=25) and graduate level students (n=13) who were completing a seven-week LAP in a leadership course offered during the spring of 2014. Undergraduate students completed the course via real-time classroom instruction in small groups of 3-4 students. Graduate students completed the project individually in an asynchronous online course.

The pre-test included demographic items, and assessed legislative advocacy knowledge, values, and actions. The post-test included the same knowledge, values and actions items as well as perceived barriers to future advocacy actions. It also included two open ended questions addressing participation in advocacy efforts and providing feedback about the LAP. The knowledge variable and the barriers were assessed on a seven-point Likert scale ranging from 1=strongly disagree, to 4=neutral and 7=strongly agree. The degree of importance for the values variable was scored with a seven-point Likert scale ranging from 1=extremely not important, to 4=neutral and 7=extremely important. The action variable was assessed on a seven-point Likert scale measuring probability of engaging in actions ranging from 1=not very probable, to 4=neutral and 7=very probable. The questionnaire's Item Content Validity was previously established at 80% or higher.⁸

The questionnaire was administered via Qualtrics (Provo, UT) for three weeks for both the pre-test at the beginning of the course and the post-test at the end of the course. Two reminder emails were sent for the pre-test and the post-test. Participants were offered an incentive of one bonus point added to their final grade if all questions on the pre-test and post-test were completed. Students were also given the choice not to participate in the study and complete an alternative activity to earn the bonus point.

Chronbach's alpha scores were calculated for each of the pre-test and post-test knowledge, values, and actions variables. Hypothesis testing occurred through parametric analysis with a RM-ANOVA to compare averages from pretest to posttest responses and between the undergraduate and graduate groups. Assumptions of normality were investigated by using the Kolmogorov-Smirnov and Shapiro-Wilk tests. Homoscedasticity assumptions were assessed with the Box's M test of equality of variance matrices and Levene's Test of equality of error variance. If either assumption of normality or homoscedasticity

were violated, non-parametric testing was employed to define the robustness of the RM-ANOVA.

Descriptive statistics determined the average responses of perceived barriers to legislative advocacy (mean and standard error). Mann-Whitney U testing compared differences between undergraduate and graduate responses to perceived barriers. Bonferroni corrected *p*-values minimized the occurrence of a Type I error. Statistically significant results of *p*≤0.05 were reported. All comments from the two open-ended questions were coded and grouped according to the hierarchy of the affective taxonomy of learning.⁴

Results

One hundred percent of the convenience sample responded (undergraduate; n=25 and graduate; n=13). All participants were female and undergraduates were between the ages of 20 and 30 years while the majority of the graduates were between the ages of 30 and 40 plus years. All undergraduate students were members of the American Dental Hygienists' Association (ADHA) Student Dental Hygienists' Association and 18.5% (n=5) served in leadership positions in this organization. Approximately one-half of the graduate participants held membership in the ADHA (46%; n=6), and 15.5% (n=2) served in leadership positions. In both groups, 83% (n=34) were registered to vote and 68% (n=28) voted in the last election.

Cronbach's alpha scores of 80% or higher were established for each of the three variables for both pre-test and post-test responses to measure the consistency of the scales in the questionnaire. The pre-test knowledge score was 0.872 and the post-test was 0.804. The pre-test value score was 0.991 and the post-test was 0.941. The pre-test action score was 0.920 with a post-test of 0.953. These scores indicated a high internal consistency of the variables.

Descriptive statistics suggested an increase in mean scores for both the undergraduate and graduate level participants from pre-test to post-test (Table I). Both levels of students ranked pre-knowledge scores as almost neutral, while high post knowledge scores were reported. Pre-value and post-value scores were high for both groups. Pre-actions were ranked neutral to high for all participants while post actions were ranked higher.

Table 1. Pretest and Posttest Mean Scores and Standard Errors*

Variable	Undergraduate Level		Graduate Level	
	Pre-test Mean (SE)	Post-test Mean (SE)	Pre-test Mean (SE)	Post-test Mean (SE)
Knowledge	3.5 (0.20)	6.5 (0.09)	4.1 (0.29)	6.5 (0.09)
Values	6.0 (0.15)	6.6 (0.12)	6.4 (0.21)	6.8 (0.16)
Actions	3.9 (0.25)	4.7 (0.27)	4.7 (0.33)	5.3 (0.36)

*Scores ranged from 1 (lowest) to 7 (highest).

No violations to the homoscedasticity were present for the knowledge, values, and actions scales; however, normality was violated with the values and actions outcomes. The nonparametric testing, used to verify the robustness of the RM-ANOVA when violations to normality was present, did not differ from the RM-ANOVA; therefore, parametric results were reported for all three variables.

There was a significant difference in knowledge from pre-test to post-test for all participants ($p < 0.001$) (Table II). When comparing undergraduate and graduate level participants knowledge, no significant difference was found between the groups ($p = 0.141$). No significant interaction was detected between the pretest versus posttest knowledge scores and undergraduate versus graduate level ($p = 0.072$).

Similarly, for the values variable, a significant difference for the under-graduate and graduate level participants, pre-test to post-test, was found ($p < 0.001$) (Table II). No significant differences were found when comparing undergraduate to graduate level ($p = 0.243$) and no significant interaction was detected when comparing the pre-test versus post-test scores and undergraduate versus graduate level ($p = 0.389$).

The results for the actions variable found a significant difference between the pretest and posttest scores ($p < 0.001$) (Table II). No significance difference was detected when comparing the two groups ($p = 0.184$) and no significant interaction was demonstrated when comparing the pre-test versus post-test and the undergraduate versus graduate level ($p = 0.922$).

No significant differences were found between the undergraduate and graduate responses about perceived barriers ($p = 0.119$). The three greatest barriers were: lack of time to be involved in legislative activities, lack of comfort speaking personally with legislators or staff members, and lack of comfort testifying before legislators (Table III). Representative comments to the two

Table II. Knowledge, values, actions RM-ANOVA with Bonferroni correction

Knowledge					
Source	SS	df	MS	F	Sig
Pre-test vs Post-test Undergraduate and Graduate	110.802	1	110.802	243.108	$p < 0.001^*$
Undergraduate vs Graduate	1.579	1	1.579	2.276	$p = 0.141$
Pre-test vs. Post-test and Undergraduate vs. Graduate	1.579	1	1.579	3.465	$p = 0.072$
Values					
Source	SS	df	MS	F	Sig
Pre-test vs Post-test Undergraduate and Graduate	3.748	1	3.748	22.940	$p < 0.001^*$
Undergraduate vs. Graduate	1.011	1	1.011	1.411	$p = 0.243$
Pre-test vs. Post-test and Undergraduate vs. Graduate	0.124	1	0.124	0.762	$p = 0.389$
Actions					
Source	SS	df	MS	F	Sig
Pre-test vs. Post-test Undergraduate and Graduate	10.597	1	10.957	25.510	$p < 0.001^*$
Undergraduate vs. Graduate	4.986	1	4.986	1.836	$p = 0.184$
Pre-test vs. Post-test and Undergraduate vs. Graduate	0.004	1	0.004	0.010	$p = 0.922$

* Statistical Significance: $p = 0.05$

Table III. Perceived barrier scores

Barrier	Undergraduate Level Mean (SE)*	Graduate Level Mean (SE)
Lack of time to be involved	5.58 (0.22)	6.23 (0.20)
Lack of comfort speaking personally with legislators or staff members	5.04 (0.30)	4.23 (0.57)
Lack of comfort testifying before legislators	4.72 (0.33)	4.85 (0.50)
Lack of priority to be involved	4.54 (0.36)	3.38 (0.50)
Lack of mentorship in the state dental hygienists' association	3.81 (0.31)	3.08 (0.49)
Lack of interest advocating	3.69 (0.36)	2.31 (0.23)
Lack of belief that my legislative actions can make a difference	3.56 (0.33)	2.54 (0.48)
Lack of knowledge of the legislative process	2.33 (0.32)	1.69 (0.17)

* Standard Errors

open-ended questions are reported in Table IV. Participant comments reflected the first three levels of affective learning: receiving, responding, and valuing.

Table IV. Examples of Responses to Open-Ended Questions

Affective Domain	Encourage probability of participating in legislative advocacy to improve oral health. Additional feedback about the LAP
Receiving	This educational project helped me gain interest in legislation. It helped me to once again realize each role the dental hygienist plays.
Responding	Personal confidence that I can be involved in making a difference. If a bill directly affected me and my family, I would be more willing to be an advocate.
Valuing	I appreciate having the opportunity to learn more about legislation so I am able to put my own voice out to benefit myself and patients. I feel empowered that I can make a change in my community.

Discussion

Completion of a seven-week Legislative Advocacy Project increased knowledge, values, and future actions for undergraduate and graduate participants. Knowledge is represented as learning in the cognitive domain; whereas, values and actions are represented as learning in the affective domain. Both domains are integral to one another; however, it is not clear from this investigation how influential each domain is to the other and further investigation into this relationship is warranted. Real and perceived barriers to advocacy action were identified and educators should provide opportunities in the curriculum to address these barriers. Knowledge about advocacy is not difficult to teach; although, providing meaningful learning experiences to solidify cognition and to influence affective learning requires both time and an investment from administrators, educators and students to develop in professional programs.

Time and investment in advocacy education throughout the professional curriculum and during student professional association activities are needed for students to participate in multiple applications of advocacy. This education should include meaningful experiences such as visiting the state capitol for a tour, participating in a Lobby or Advocacy Day, viewing a legislative session, providing testimony for a health bill or engaging in a mock legislative session with state legislators.⁸

Also, having a state legislator visit students in person or via electronic media allows students to interact and become comfortable with legislators. One example of multiple advocacy experiences involved an Oral Health Policy Forum for dental students to learn about the political environment and the legislative process through interaction with political speakers, small group discussions, presentations by lobbyists, and state legislature visitations during the annual session.¹¹

Advocacy education is currently not included in the accreditation standards for dental hygiene,¹² dentistry,¹³ and dental therapy¹⁴ programs; whereas advocacy standards exist for pediatric dentistry programs.¹⁵ In comparison, the professional associations for oral health care providers have advocacy initiatives and statements within their strategic plans and policies.¹⁶⁻¹⁸ Other health care disciplines have implemented advocacy education into professional curricula. Advocacy is an essential role in professional nursing practice as outlined by statements about ethics, policies, and standards; therefore, teaching nursing students to advocate is imperative.^{19,20} Suggestions for advocacy education from nursing literature include the use of digital storytelling and narrative pedagogy. Digital storytelling involves developing a short media production using photographs, video footage, music, and sound to present an idea or issue, which was related to public health advocacy.²⁰ Narrative pedagogy is teaching and learning that evolves from discussing the lived (advocacy) experiences of teachers, clinicians, and students.²¹

An example of advocacy in medical education, focuses on a three-tiered approach at the individual, community, and legislative level.²² Pediatric residents attended workshops throughout a 9-month curriculum addressing social determinants of health, community resources for patients, and legislative advocacy. The curriculum culminated with a Lobby Day where the residents learned about federal and state policies affecting pediatric patients and met with state representatives to advocate for disparity issues experienced in the populations they served.²² Pediatric residents significantly improved individual patient advocacy; however further study regarding enhancing community and legislative advocacy is still needed.²² These examples provide suggestions for building designed advocacy experiences into the curriculum to enhance knowledge, values, and actions as well as cognitive and affective learning.

This study was a close replication of previous advocacy study by Rogo et al.⁸ Results of both studies were similar demonstrating that participants' knowledge, values, and actions did improve after participating in a LAP. A difference was found, however; in the current study because there was

no significant difference between groups (undergraduate vs. graduate students) when comparing the LAP pre-test to the post-test for all three variables. Results from the current study suggest that the undergraduate and graduate student groups may have had equal stakes in their involvement in the project. One difference in this study as compared to the initial study was that the undergraduate student group sizes were smaller, thereby, increasing active student engagement.⁸ These results indicate that the project is a valuable asset in creating advocacy awareness in dental hygiene curricula.^{8,9}

The top three perceived barriers to advocacy, lack of time, lack of interest and discomfort with public speaking, were the same for both studies.⁸ Vishnevetsky et al. also noted similar barriers when pediatric dentists were surveyed: lack of time, lack of interest in advocacy beyond the dental office, and lack of comfort with public speaking.²³ Negotiating barriers, regardless whether they are perceived or actual, becomes a key strategy in helping students and professionals achieve advocacy action. Alternative active learning strategies to address barrier negotiation might be useful. A Strategic Weakness Opportunity Threat (SWOT) analysis for perceived barriers should aid the professional and professional organizations.²⁴ Also, an Appreciative Inquiry approach could be used to explore strategies that were successful in the past and alternative solutions that focus on a positive tactic rather than on the problem or barrier.²⁵

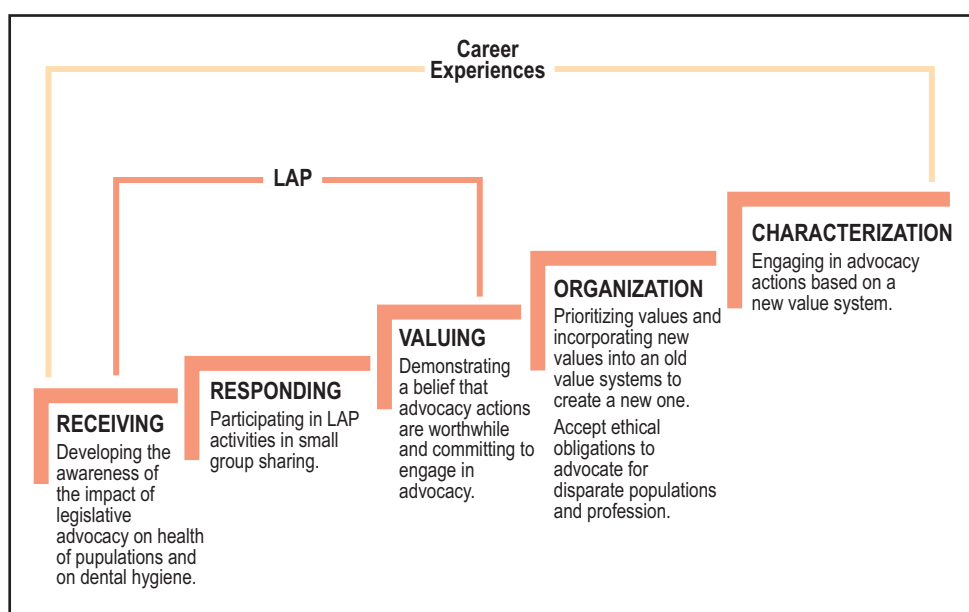
An Affective Advocacy Model was created based on the analysis of the responses to the open-ended questions and on current literature (Figure 2). The analysis of the participants' responses revealed that some participants' learning from the LAP reached the first three levels of the affective domain: receiving, responding and valuing. Similar results were found in a previous study.⁸ At the receiving level, respondents became aware of the dental hygienists' role in advocacy and were open to LAP experiences. At the second level, responding, students built on their awareness, reacted to the weekly advocacy activities and were motivated to learn. At the valuing level, participants demonstrated appreciation and motivation to invest in and commit to advocacy.

Advocacy commitment was described by dental hygiene alumni as the "importance and passion that bind one to the act of engaging in an advocacy course of action."⁹ Importance was defined as something having value or significance to someone and

passion was identified as an intense emotion that directed action to create a change.⁹ A self-reflection paper on the LAP project or other aspects of advocacy is one suggestion to help students recognize and examine core values. A future exploration into transformational learning, the process of developing new schemas based on the reflective assessment of assumptions and demonstration of actions consistent with the new value system,^{6,26} would also be warranted. Career experiences from working on legislative initiatives to expand practice acts and provide care with new workforce models to ultimately improve access to care has been shown to influence dental hygiene practitioners' affective learning.¹⁰ These experiential activities have been shown to foster affective development at all five levels; however, at the organization level, empowerment was reached when values were prioritized, and perspectives were transformed. At characterization, the highest level, dental hygienists demonstrated engagement in actions and behaviors to improve access to care.¹⁰

Gallagher and Little studied physicians' values and advocacy actions.²⁷ Their research suggested that personal values developed from prior life experiences, exposure to situations of empowerment and disempowerment, and the enjoyment of collaboration on advocacy teams with others who shared the same values, contributed to advocacy action.²⁷ Collective efforts and mentoring experiences are key components for experiencing advocacy empowerment which is defined as the "confidence and conviction to engage in advocacy to create change."⁹ A Professional Development Plan can be used to set goals and develop action items to help students and professionals engage in advocacy action.²⁸ Creating exposure to disorienting dilemmas

Figure 2. Affective Advocacy Model



through planned learning activities or service opportunities in curricula provide an avenue for redefining values and creating a new value system; thus, creating a transformative experience.²⁹

A disorienting dilemma may influence learners to progress from one level of the affective domain to the next. This type of dilemma causes learners to change their perspective through an episodic experience or an accumulation of experiences.⁶ Future research should investigate this phenomenon as learners move through the levels of the affective domain.

Limitations of this study include the small convenience sample from one university. Additional research is needed with larger populations in varying geographic locations to determine the impact of a LAP on learners' knowledge, values, and actions and affective learning in advocacy education. Further investigations are warranted in the area of generating importance and passion leading to legislative action in the affective domain.⁹ Transformative learning in advocacy education merits exploration as well.

Conclusion

An increase in knowledge, values, and actions was achieved after participation in a LAP for undergraduate and graduate dental hygiene students. Barriers will always be present in any advocacy effort; therefore, strategies to address barriers should be included in advocacy education. The LAP implemented in this study created a cognitive foundation for learning about legislative advocacy and generated learning in the affective domain. The LAP was influential in integrating cognitive knowledge and changes in receiving, responding, and valuing, representing the lower three levels of the affective domain. Additional research is needed to examine advocacy education to create transformative experiences leading to characterization, the top level of the affective domain.

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