ARENA OF MAKING

Check for
updates

Impact of Online Service-Learning on Civic and Social Justice Behavior of Undergraduate Laboratory-Based Graduates

Iqbal Ahmad[1] · Rani Gul[1]

Abstract

Students working in a laboratory context hardly find an opportunity for civic interaction and social justice learning which is mostly possible through live interaction with community and outside world during an academic carrier. However, online service-learning is considered to be one of the effective approaches to solve this issue. This research study aimed to explore perceptions of students working in a chemistry laboratory about changes in their social justice and civic attitudes after participating in an online service-learning project. A qualitative explorative research design was employed to investigate the impact of online service-learning on the students' social justice and civic attitudes through web-based instruction. The results showed that the online service-learning experience greatly improved their social justice and civic attitudes. The students showed readiness to help out needy people in the local community. They also expressed willingness to work with diverse social groups and people from other socio-cultural and linguistic groups. The students appreciated the importance of teamwork and wanted to make decisions collaboratively. They learned to behave positively during an online interaction with local community people. Based on the results, it is concluded that online service-learning is a useful approach for promoting social justice attitudes and civic attitudes of students working in a laboratory context.

Keywords Social justice · Civic leadership · Virtual classroom · Service-learning

Introduction

Online service-learning is becoming a popular pedagogy nowadays. It provides a synergy for learning different learning opportunities for students especially for those who do not get a chance to work physically in a real community setting. It has been observed that students working in a laboratory cannot find enough wider exposure to community interaction and hence remain backward in terms of civic skills and social justice behavior. This problem has been increasingly found among chemistry students who are mostly

✉ Rani Gul
  dr.rani27@gmail.com; ranigul@uom.edu.pk

[1] Department of Education, University of Malakand, Chakdara, Pakistan

Springer

engaged in experiments throughout their education career and get less exposure to community interaction. This research was specifically aimed to engage such laboratory-based chemistry students through an online service-learning project to enhance their civic and social justice attitude in a local college (Gul et al., 2021a).

Online classrooms provide wider opportunities for students to understand and practice social justice and social change in a collaborative way. Integration of technology with pedagogy creates a more simulating environment for teaching and learning. The online learning experience and cultural interaction promote actual communication and interaction that leads to real intellectual transformation in learners (Ali et al., 2021; Huda et al., 2018; Aguirre-Mendez & Mahoney, 2020). Social justice and civic engagement are two important goals of education. It is important to educate students of chemical education about social issues in the local context and at the global level (Ayub et al., 2021; Tomat, 2020). However, to this end, teachers face several issues while facilitating students to learn critical social justice and civic abilities who work in a closed laboratory environment (Borras et al., 2018; Blankson et al., 2015). Hence, contemporary students of chemical education need to be educated and informed about issues of social injustice and oppression locally in general and globally in particular. Such students find less opportunity for wider social interaction and civic engagement. For this purpose, online service-learning courses can be designed and implemented in chemical education to achieve the civic and social justice goals of education. Service-learning is a collaborative experiential learning process that provides students practical opportunities to discuss and different social and civic-related issues in society (Salam et al., 2019a, b). Students of a service-learning course critically reflect and identify global issues of injustice and critically analyze their implications. This kind of experience becomes an exciting adventure when discussed and implemented in the context of a virtual learning environment (Asghar & Rowe, 2017). Providing a problem-based learning atmosphere to students to learn about civic and social justice issues in a society in a chemical laboratory is a challenging activity for teachers. Such students find it difficult to come into direct communication and association with others in society. Studying in a chemical lab virtual service-learning classroom provides an opportunity for students to compare and contrast different social justice and oppression issues occurring in local culture or international communities (Gul et al., 2021b; Piol et al., 2019).

Integrating online service-learning experiences with chemistry curriculum goals and objectives through virtual classroom instruction may create a unique and practical combination of learning activities aimed to educate students of chemical education in a laboratory context and real-world situations (Bukhari et al., 2021; Saitta et al., 2011). Evaluating the power of service-learning pedagogy in the context of the virtual environment may help teachers and researchers in identifying the foundational best practice by using technology tools that create an academic synergy connecting academic goals with real-life experiences based on relevant and meaningful interactions (Gul et al., 2021c; Schmidt et al., 2020).

Students working in a laboratory context generally do not get the wider opportunities for physical interaction with people in the community engaged in a laboratory and doing experiments most of the time. For this purpose, an online service-learning project was implemented in an online service-learning project for those students of chemistry who work in the laboratory and have less exposure to the community for practical application of civic and social justice concepts learned in a traditional classroom context. Such students always struggle to materialize this goal of life along with working in a closed laboratory contest with experiments (Gul et al., 2020a). At the end of the project, the chemistry students' perceptions were explored about their participation in the online service-learning

project and their experiences of participating in the online service-learning and its effect on their learning outcomes in terms of improved civic and social justice behaviors.

Theoretical Foundation

An important aspect of the course under study is integrating the experientially based service-learning in a local community context and facilitating the civic and social justice learning of students working in a chemistry laboratory. Service-learning researchers (Dameris et al., 2019) have suggested that for effective implementation of social justice and civic pedagogies, educators need to create a virtual environment for promoting an enabling continued communication and interactions, and built a meaningful social relationship; develop instructional approaches that help to foster ongoing collaboration and academic freedom; design and implement methods that provide an opportunity for doing deeper reflections and social inquiries; and develop curriculum using local and internationally recognized accessible technological tools that are supportive in achieving the primary and secondary goals and help develop coveted skills and knowledge (mastering website navigations and using information related to software and hardware) among students (Gul et al., 2020b; Guthrie & McCracken, 2010). Collectively, such methodologies may help to transform teaching and to learn collaborations in sustainable ways for altering learning experiences and enriching individual freedom and social interactions and creating awareness (Cranton, 2006; Gul et al., 2020b; Lave & Wenger, 1991; Mandell & Herman, 2007; Rovai, 2002).

The online service-learning course which was the focus for this study aimed to evaluate the community engagement of students through online service-learning in a positive manner based on a social action framework for bringing about a broad change in their civic and social justice behavior as active civic-minded members of the society (Stefaniak, 2020). This project also aimed to enable the students through online service-learning to reflect on the relationships between individuals and society within contemporary global society. In an online teaching and learning approach through online classroom dynamics, students start exploring the values and ethics and apply them in a diverse context facilitating civic engagements and community-based practices (Merryfield, 2003). Moreover, students also explore such strategies that promote social action for bringing local and global social change via collaboration and communities in the online service site (Einfeld & Collins, 2008). Achievement of this objective through this research study needed that students must have a focus on community-based service projects where theories of social justice could be practiced and assessed by them and apply in their practical situations. Hence, a theoretical framework combining the experiential learning approach using service-learning anchored this study.

Theoretical Framework

Teaching for social justice and civic development could be realized by many theoretical frameworks. Many critical theories have contributed towards the evaluation and justification of the philosophy of service-learning: critical race theory (Mitchell, 2015; Yosso, 2005), developing identity (Tatum, 2000), and socialization (Gul & Khilji, 2021; Harro, 2000). However, the concept of service-learning rests in the philosophy of experiential learning theory of John Dewey. The experiential learning theory of David

Kolb also provides a firm theoretical foundation to service-learning pedagogy. Service-learning is an experiential learning approach that engages students in the practical application of classroom knowledge in real-life situations through interaction in the community (Gul et al., 2021d; Merryfield, 2003). During service-learning, students apply the newly learned information in real-life situations through teamwork, interaction, reflection, and providing service to people in the community. This experience improves their concepts of civic-mindedness and social justice orientation. They practically perform service to people and learn social and civic behaviors (Guthrie & McCarran, 2010). Learning by doing or through experience is considered by experiential theorists to be the foundation of social justice pedagogy (Chiva-Bartoll et al., 2020; Ayers et al., 1998). Teachers may understand this message and guide properly students to focus on changing the world around them. Meaningful change rests in experience which becomes more powerful when it is combined with wider opportunities for students to conduct critical inquiry and reflection. This process has been well illustrated by David Kolb through his experiential learning theory that stresses making meaning out of the direct experience. This theory further explains that learning is a process where knowledge is created through transforming experience (Gul & Rafique, 2017; Carnicelli & Boluk, 2017). Kolb proposes two ways for assigning meaning to experience: being engaged in concrete experience and generalization of learning beyond the existing or immediate situation. He also proposes two ways for integrating experience: by critical reflection on the experience and the subsequent learning as well as doing active experiments with the newly learned concept in new situations or context (Donaldson & Daughtery, 2011).

Contemporary service-learning educators also give importance to creating an environment that gives value to experience and also active integration of the experience with the newly created knowledge when the students collectively participate in the community context-based assignments (Carrington & Selva, 2010). Such type of collective interactive environment fosters a positive attitude among students towards others and also through sharing knowledge obtained through experience during service-learning (Brookfield & Preskill, 1999; Foli et al., 2014). In such a situation, students can extend their learning beyond the traditional classroom environment by assisting local communities and people who are in need (Guthrie & McCarran, 2010). The service-learning approach incorporates a participant-oriented focus that acknowledges and utilizes student experience, skill, and knowledge and allows them to decide regarding the application of expectation and priority to new learning opportunities and engaging one another as peers.

Service-Learning Defined

As compared to a traditional classroom, in an applied experience, learners find an extended opportunity for reflection, critical thinking having a comprehensively positive impact on their social and civic development (Groh et al., 2011; Sze-Yeung Lai & Chi-leung Hui, 2020). As an experiential learning approach, service-learning has the main purpose of providing practical learning through service to achieve two aims: meeting academic goals of students and service to the community (Stanton et al., 1999). In this way, service-learning creates a theoretical connection between the complex concepts of constructing knowledge and community actions leading towards developing students' awareness about local social issues as well learning that occurs in a distinctive service placement (Holland & Robinson, 2008). In a service-learning, the pedagogical aims are attained by the deliberately planned curriculum that promotes knowledge construction and promotion of the culture of reflective

practicum in a collaborative environment that incorporates interactive goal-oriented discussion and team-based activity, reflective inquiry, and presentation. Since service-learning is based on a pedagogical framework that is characterized by the connection of service with academic goals, there is a clear opportunity for students to be critically reflective in a problem-based learning environment (Marcus et al., 2020; Kirkland, 2014).

Teaching for Civic and Social Justice

The target course for this study aimed to provide support to students working in a closed laboratory context for social justice and civic education using the online service-learning framework. Under a social justice teaching approach, students are engaged in an online situation where they recognize social issues in society and work to resolve them. They also positively and critically react to challenges faced by humanity (Ayers et al., 1998; Saltmarsh & Zlotkowski, 2011). In such a situation, the role of educator or teacher goes beyond the traditional information gaining approach to knowledge approach, personal awareness, motivation, and experience to the facilitation of knowledge sharing and strengthening relationships among people. Thus, the goal of instruction becomes developing connections and promoting partnership through teaching and learning (Myers, 2020). Students, under such conditions, do not need to receive information passively rather learning becomes a matter of choice and action on the part of students. Teaching becomes a unique source for developing human relations and solving the problem rather the transporting information (Boyle-Baise & Langford, 2004; Tinkler et al., 2014).

During service-learning practice, the process of education becomes a journey for personal and community development and students explore new information and theoretical frameworks. So, the role of the teacher in a social justice education becomes more than teaching about injustice rather a pure commitment to provide students with a platform to work as a change agent locally and globally (Stewart, 2012; Kincheloe, 2004). The service-learning teachers who plan to teach social justice need to construct such a learning environment that includes pathways for active learning and practical demonstration or continuous inquiry (Ayers et al., 1998). In an environment social justice teaching environment, instruction needs to be based on support and be challenging (Roodin et al., 2013). Hence, the educators in a service-learning framework attempt to educate students to identify social justice issues in the society along with empowering them to lead in the journey for action and change (Mitchell, 2007).

Extending Instructional Impact Through Technology

A combined philosophical approach consisting of attributes of progressivism and humanistic approaches for selecting teaching methodologies to shape the instructional and pedagogical processes and for promoting individual and collective awareness and providing students online interaction and exploration opportunities in a locally based social action can be useful for developing positive social justice behavior and civic-mindedness among students (Faulconer, 2020; Kanuka, 2008). Technology learning-based online learning becomes interesting when it is combined with on-site learning experiences and online course work for enabling students to be engaged with their local communities and understanding social problems. Technology becomes more helpful when used in combination with a learning method that supports reflectivity, inquiry, and collaboration such as service-learning (Salam et al., 2019a, b).

The online service-learning pedagogical approach helps in shifting learning beyond the traditional classroom information sharing to creating and contributing to knowledge and development in an online experiential learning context (Barab et al., 2001). Meyers (2008) suggested that discussion for facilitating critical discourse to explore issues related to social justice becomes more effective when it is conducted in a virtual or online environment. The virtual and online classroom provides a platform for those students who do not find an opportunity to have practical interaction with community people where they can demonstrate reflective abilities through online dialogue and critical discussion. This helps them in achieving the goals of positive and collaborative pedagogical aims of becoming socially responsible and civically active (Salam et al., 2019a, b; Anderson et al., 2000). This online service-learning inquiry model not only helps in developing a framework to materialize the potential of reflectivity in a virtual learning context but also helps identify some essential principles of higher quality social and civic learning on the part of students (Maicas et al., 2020). Thus, using the online instructional process aids educators in fostering deeper insights about the learning outcomes of students for positive social and civic behaviors.

Methods and Materials

Research Design

In this study, a qualitative case method was used. The perspectives of chemistry students' learning as a consequence of their participation in an online service-learning project at a local college were explored. The perspectives were explored based on the constructivist paradigm in which objective investigations were carried out to study the perspectives of students participating in an online service-learning project (Guetterman et al., 2015). In a constructivist approach, researchers adopt a relative ontological stance, a subjectively based epistemological stance, and a naturalistic set of methodological procedures (Guba & Lincoln, 2005). This approach allows the researchers to prepare the results and present them using grounded theory or phenomenological inquiry (Guba & Lincoln, 2005). Using this type of paradigm, in this study, the laboratory-based chemistry students' perceptions were explored about their participation in an online service-learning project and its impact on their social justice behavior and civic learning.

The Online Service-Learning Course

In this web-based course, the online service-learning approach was chosen to enhance the capacity of chemistry laboratory students and to facilitate them to share their potential in an interactive, communicative, and collaborative environment. The basic purpose was to enable the students to generate shared learning goals and solve human problems. Therefore, continuous online interaction among all participants (students, teachers, and community) was ensured during the online service-learning activity through different online interactive tools such as emails, smartphones, social media, and virtual talk on camera. This aim was achieved first by creating online blogs, discussion forums, WhatsApp groups, telephonic contacts, video and audio, and short online conferences. The students were further facilitated and supported towards utilizing social media through networking and open video shared platforms like Google Meet. These information sharing channels helped in

distributing and archiving the course contents, utilization of documentation, file sharing, lecturing, podcasting, and e-materials like books, journals, and newspapers during the online service-learning course. The technologies used in the course are also being used in different educational settings in association with other telecommunication with experiential learning tools to achieve collective and individual educational targets.

Details of the Course

During the conduct of this study, the target course on social justice and civic attitude of students had already been taught through an online service-learning project to the chemistry laboratory students for four semesters. The course assesses community engagement of students from social justice and civic attitude framework perspective by exploring various dimensions of social justice and civic attitude in a community context. Main topics relating to the target course were discussed throughout the course duration. The main requirements of the course were completing an action plan, 40 h of online community service, writing reflections in a reflective journal, taking part in the structured discussion, and writing reflective essays and final papers as culminating activities. The students were asked for selecting any non-profit agency or organization for performing service. A health organization was selected and students were allowed to perform the role of health agents giving online talks to the health professionals about the importance of care of patients. Students delivered lectures on the relevance of cleanliness and care during dealing with patients in the health centers. Different online WhatsApp groups were formed to share information and for online interaction. When the service sites were selected and confirmed along with the representatives of the agency or organization, the participating students were instructed to determine personal learning goals for successfully doing the online community service experience. A supportive learning atmosphere was designed and created and opportunities were provided to all laboratory-based students for applying their learning in the classroom to the new experience context and to guide gaining meaning from the experience.

Sample

The respondents were recruited from a local college in district Chitral, Khyber Pakhtunkhwa, Pakistan. The enrollment of the students was obtained from the college administration where the specific online service-learning project was introduced focusing on social justice and civic attitude of students working in a chemistry laboratory. When the request was tendered, 27 students had completed the course and 18 were still enrolled in the course at the college. Once the final list of the verified respondents was obtained, each of the participants was contacted individually through telephonic contacts. Out of the available students, 25 students showed readiness to participate in interviews and 12 students were interviewed and further interviews were stopped due to saturation in the data.

Data Collection

A semi-structured interview protocol was created and used for data collection. Each interview was transcribed and collected through audio recording and field notes. The results were prepared and presented using the interview data. The participants were allowed to share information about their experiences and opinions of participating in the online

service-learning course through interviews. The collection of data through the interviews provided an opportunity for the students to share, identify, and reflect on their participation activities and experiences and perceptions about the impact of participating in the online service-learning course (Kvale, 1996). This helped to understand and articulate the specific knowledge about their learning and also accelerated their awareness of the meaning and relevance of the social justice practices through online interaction.

Data Analysis

The data was organized, coded, and categorized. Out of the created categories of information, finally, themes were explored from the data based on thematic analysis technique (Walcott, 1994). These three processes were used to organize and interpret the collected data. The data were analyzed for identifying common themes as well as unique learning areas related to students' participation in online service-learning. The views and perceptions of the participants were transcribed immediately after each interview. Transcriptions based on the interviews were highlighted after assessing and reviewing the information to align the data with potential codes. We used phrases and words for determining the refined codes for each respondent. Emerging themes were explored when similar ideas appeared in the respondents' transcriptions. We examined the relationships among those themes which were identified through studying the emerging themes.

Results

Among all the students who participated in the online service-learning project, 3 were 20–22 years, four were 19–20 years, and the rest were 23 years of age. Most of the students belonged to the same district and five were from outside of the district. All the students were male because due to local cultural reasons female candidates were excluded. Based on the analysis of data, three themes emerged: new learning about social justice and civic leadership roles, critical thinking on social and civic-related issues, and reflection on the course content as well as on community site learning experiences.

New Learning on Social Justice and Civic Leadership

Research has established about the usefulness of online service-learning that it produces potential responsible citizens having socially responsible minds (Waldner et al., 2010). For deeper understanding of the effects of e-service-learning, the respondents shared their learning in detail. The majority of the students responded that they learned new concepts of civic roles and social justice attitudes because of participating in the online service-learning project. Five students had learnt new concepts in social justice as well as leadership, three learned new ideas about civic-related roles and engaging in civic responsibility as active citizens, and three replied that they learned new concepts in social justice attitude, civic leadership, and course content. Research has already shown that by becoming involved in service-learning activities, students not only improve their course comprehension but also develop leadership skills and civic sense to solve issues in society (Barab et al., 2004). During the interview session, one student responded that participation in the e-service-learning in a laboratory context enabled him to better understand concepts of

social justice and civic leadership. Now he could see himself more aware of these concepts in his daily life. He stated,

I was not much aware of the important concepts of civic leadership and social justice attitude as well as reflection on course content in my classroom where lectures are conducted, however, through this experience I learned how to think, about issues in society, how to share ideas and look for the solution. I feel that I am a civic leader and it is my responsibility to work for the betterment of people. I thought this was the responsibility of public servants or political parties, but I realize I am an essential part of the society and I can do a lot for its development, I feel much empowered in my class.

Another participant replied, "In this online service-learning course we not only learned the concept of community service, civic leadership and social justice, but we found some opportunities for observing and practising the individual concept in real-life situations." Researchers have suggested that service-learning effectively prepares young people for workplace and citizenship responsibilities as contributing members of society (Malvey et al., 2006). The respondents elaborated that how the e-service-learning course enabled them to practically implementing online these experiences concerning social justice attitude and civic leadership engagements.

There is a close correlation between students' participation in an online course and their learning effectiveness (Ahmad et al., 2013). Many of the participants narrated about the effectiveness of the online service-learning course that they became aware of general concepts of social justice by actualizing it through online interactions with communities and experiences. One of the participants replied "I had no clear idea about the terms social justice and civic leadership. I did not know at all what it means that put me in an embarrassing situation. But now I am clear about the meaning of these terms."

One participant commented "I learned about the meaning of social justice and its importance in society. Through the online interaction, I became aware of the true concept of social justice and its application in the community where I live with others. Now I believe that all are same, there should not be discrimination based on creed, colour and cast."

Most of the participants replied that civic leaders helped people in the community to live in harmony and peace. They were of the view that real democratic societies thrived on true civic leadership roles. One more student narrated "I did not know the concept of civic leadership before taking part in the e-service-learning activity. I never realized the important role of citizens before this experience."

The majority of the participants accepted the positive impact of the e-service-learning course on their attitude towards social equality, civic roles, and leadership practices in society.

Promoting Social Change and Civic Leadership Through Critical Dialogue

Online service-learning helps to produce thinking citizens who show positive attitudes towards the resolution of problems of people and also show a better understanding of the needs of human societies, issues of justice, and civic life (Battistoni, 1997; Kirlin, 2003). To facilitate critical dialogue among students on social justice and civic leadership, questions were asked about the issues of social justice and leadership in society and how these issues were being addressed. They were allowed to share their views individually as well as in groups. They were further asked as to how they explored the issues through online service-learning community-based participation. In the course of

interviews, the students were asked about their reactions while discussing the issues of social justice in the online service-learning course.

Out of the total respondents interviewed, the majority replied that they learned about social justice and civic leadership while interacting with community people and listening to their issues in interaction using tools like WhatsApp and Facebook. They also learned in peer-group discussions. One of the participants narrated "I had no idea of social justice and civic leadership roles before participating in this course. When we discussed the issues faced by people in our society, I was aware of these problems. The nature of problems ranged from gender rights to the rights to education and social welfare and so on. I like to have such type of discussion again in my class."

Research has indicated that citizenship skills can be learned in different ways like persuasive thinking, writing, and listening (Warschauer, 2003). During the interviews, three of the participants reported that they did not know about these topics in an online course before this. One student said "I had no such type of discussion before in any online class before participating in this service-learning class. Now I think that social justice and civic leadership are important concepts as these are directly related to our roles and responsibilities as responsible citizens in society. These are also essential concepts in our daily lives. One more student replied "I feel now that social justice and civic leadership concepts are the foundational features of any society. Every member of society should be aware of these important concepts. I had not participated in any such kind of discussion before in my class on these important issues. I felt satisfied after participating in the discussion." Another participant said, "I had not discussed the topic of social justice in any online class earlier, so it was an amazing experience for me to discuss such important concepts about our society."

Research has further documented that online service-learning enables students to discuss different issues on civic life, community, and active citizenship (Crawford, 2011). When the participants were inquired about their personal reactions to these concepts through an online source, most of them were of the opinion that they enjoyed the discussion on concepts of social justice and civic leadership. One participant narrated "I like the discussion on social justice and civic leadership that we had in our online course." Another student said "I looked forward to participating in the discussion as these are very interesting concepts that we never discussed in a laboratory context. Most of the time we are busy testing some chemical action or reaction based on formulas." Another student narrated his online service-learning experience in the following words: "Discussion on social life concepts provided us more opportunity to connect to our society as an active member. We could not find this before as we are very busy in a close laboratory environment. However, this online-service-learning course enabled us to discuss concepts of social justice and civic leadership."

Online or digital service-learning effectively creates opportunities for students to be free from rigid cultural bounds and geographical barriers and participate in an online community dialogue as global social learners (Poole et al., 2011). It was interesting to note that three of the participants shared their views that participation in the online course made them more confident now as they could share their views across the different sections of the society now which was not possible for them as they were very busy in a laboratory for experimental activity. One student said "I look forward to knowing from people about the problems they face in the society and their experiences of social justice and civic roles exhibited by others towards them. During the discussion, we found that different discriminations were being committed based on colour, creed and cast in the society. These must be stopped to make society a peaceful abode of justice and democracy."

Merryfield (2003) has already found that online discussions are very important for people as through these they reveal their minds, ask questions, and take risks. During the discussion, one student responded "When I first discussed these topics on which people have a difference of opinions and are quite controversial as these are perceived differently by different people. I did not expect a positive response from people but to my utter surprise people behaved with cooperation throughout." The perceptions of students of their participation in the online classroom on social justice and civic leadership provided a powerful and deeper understanding of the impact of service-learning pedagogy on their learning.

Engaging Learners Through Planned Reflections

There is a deeper impact of critical and engaged reflections in the facilitation of learning centering on social justice and civic leadership attitudes. This process of development is made possible with the help of detailed interactive critical discussions (Merryfield, 2006). The students were inquired during the interview process about the role of reflection in their learning. Out of the total respondents, one of the participants said "I think reflection enabled me to learn about the concept of social justice and civic leadership attitudes. In this course, I learned many new things which I never thought about previously. I was able to see inside the community and its issues through the service-learning with a different mind."

Another student emphasized larger discussions on the concepts of social justice and civic leadership issues. Online service-learning provides broader chances to discuss issues of social justice and democratic life on online forums. This helps them to informed decisions based on a better understanding of the prevailing issues (Zickuhr & Smith, 2012). The participants believed that discussions would provide wider opportunities to ponder over the social justice attitude and civic leadership issues in society. One student narrated "reflections means making meaning out of the discussions. After we discussed the social justice and civic related issues in the society we concluded that such issues could be better understood and resolved through critical dialogue and discussions."

One student said "I can easily write reflections on my journal about my interactions with different people in the community and thus becomes aware of its problems and oppression faced by people. The reflections improved my thinking and now my thoughts are straightened." Another student replied, "I was able to discuss the difficult issues in the society like inequalities and injustices committed against the oppressed and disadvantaged in the society." Most of the students stated that the use of reflective journals and essays in the current online service-learning course provided them with wider opportunities to think over the concepts of social justice and civic leadership.

Discussion

The findings of this study revealed that there is a range of implications for social justice and civic leadership attitudes based on online service-learning activity. This approach combines web-based teaching with on-site placement experiences in a community context. The findings of this study show that using a variety of online-based instructional tools and services it is possible to provide broad-based learning opportunities for students who are working in a laboratory context to be aware of social justice issues and civic leadership practices on local, global, and individual levels. Previous research has indicated that for promoting critical dialogue and personal insights and actively engaging the students, it is

useful to use pedagogies that encourage applications of different technologies. This may help increase the civic leadership capabilities of students as well as creating awareness regarding social justice issues in society and resolution to solve such issues (Wray-Lake et al., 2020). The comprehensive dialogue created as a result of the rich online discussions and engagements may have deeper impacts on social justice awareness and civic leadership attitude beyond the single classroom context.

The majority of the students who participated in this study positively remarked about the importance and impact of reflection on their learning during the online service-learning experience. They stated that reflection provided them with an opportunity to have individualized and collectivized reflections during the online interactions with diverse groups in the online community that increased their awareness about the issues and problems in the society on social justice and civic responsibilities. They collected new ideas on how to deal with such types of problems faced by people and also apply them in exploring issues of people in the past and plan for the future. The readings helped promoted their cognitive development, and activities encouraged them about carrying on critical inquiries into human and social issues of the communities that occurred in on-site placements during the service-learning experience.

Ayers et al. (1998) have already highlighted the importance of teaching for social justice and its importance by terming it a platform for social change for making the world a better living place. The interaction during the online service-learning helped in fostering insights about the complex nature of various social issues related to social responsibilities and the reflective discussion worked as a means for students to construct meanings out of their experiences with the online community. The use of online technological tools helped in further extending the critical discussions on social issues and civic responsibilities by putting students on critical dialogue which enabled them to overcome challenges for students who were not able to use some of the technological tools and did not have access to them as participants (Carnicelli & Boluk, 2017). A valuable instructional time was also saved in this way which was not possible in a traditional classroom or laboratory environment. The "aha" movements were captured and multiplied through the critical discussions during the online service-learning activity which were missed in the closed laboratory environment.

Using technological tools helps students reaching out to different opportunities belonging to different places from all over the world in a community setting. This further improves students' ability for accessing available internet-based resources in the whole of the academic year. Students may create various social networks, websites, news articles, and videos. Each of these resources may potentially affect the curriculum innovations that have deeper impacts on students learning outcomes. Teachers need to identify and use such types of opportunities for capitalizing on the richest diversities in the cyber classroom and further extending the changes for enhancing the learning abilities of students (Guthrie & McCracken, 2010).

The issues of social justice, actions, and civic responsibilities involve complex thinking about the personalized and individualized online service-learning experience. In the course of the service-learning, the new ideas collected as a result of critical observations and discussions get mixed with new thinking that has developed through critical dialogue. The participants also exchange through online means and sources information about their life experiences, success stories, failure, and relationship. During the interaction, they discuss the civic and social issues in society. This is a meaning-making process that needs the learners to have the highest degrees of self-directed learning, freedom, and motivations for optimizing the online learning experiences. The online interactions provide ample

technological opportunities to grapple with different social issues and challenges in a short period as compared to a traditional classroom environment which is a time taking exercise.

The findings of this study further validate the results of previous research works showing that using critical online discussion and structured classwork deeply supports individual reflections in technology-supported learning environments (Palloff & Pratt, 2007; Tseng et al., 2009). The participants reported that they developed a stronger sense of civic leadership and social justice dispositions. The online interactions reinforced a deeper understanding of social justice and civic leadership concepts. The reflectivity and collaborations during the online interactions enhanced clear and wider connections as a process of community building as support for students focusing on different abilities such as leadership and social justice attitudes. Sujo de Montes et al. (2002) and Kanuka (2008) reminded that technology-based learning is not neutral in terms of culture and is culturally diverse. Vast discussions happen online on issues related to racial, ethnic, and power-sharing. Hence, the use of multiple instructions based on online discussions focusing on social reality and discriminations can be possible by integrating holistic learning and applications of instructional technological tools.

Conclusion

It is a remarkable task to offer individualistic and communal chances to laboratory-based learners to connect with their communities by expanding and integrating relevant social justice and civic leadership experiences in the context of local community service training. The results of this study indicated that it is always an exciting experience to promote individualistic voices of students during online service-learning and enabling them to demonstrate leadership abilities resulting in positive social actions in their local community contexts. The study showed that online teaching and learning tools can enrich development and experiences on social justice behavior and civic learning. Using online social media channels is helpful for laboratory-based students for social justice and civic instruction. The meaningful educational experience could be provided for laboratory-based students to get wider meanings and impacts for their social and civic development of students working in a laboratory context where wider physical interaction with the outside community is less. Hence, in such a situation, the online service-learning approach could help achieve the goals of socialization and civic development. The findings may be used to improve social justice and civic learning of chemistry students working in a laboratory context. Finally, it is concluded that online service-learning helps enrich civic and social justice learning experiences of laboratory-based students.

References

Ahmad, I., Said, H., Khan, I., Ali, A., Shah, F. A., & Hussain, J. (2013). Relationship between technology-based instruction and learning effectiveness: Exploring rural perspective. *European Journal of Social Sciences, 39*(4), 595–600.

Aguirre-Mendez, C., & Mahoney, M. H. (2020). Qualitative Assessment of Service Learning in a General Chemistry II Course. *Transactions of the Kansas Academy of Science, 123*(1–2), 103–120.

Ali, I., Gul, R., Khan, S. S., Karim, K. (2021). An Evaluative Study of English Contrastive Rhetoric in Pashtu Speaking Areas of Pakistan: A Case Study of District Swat. *INGUISTICA ANTVERPIENSIA*, *2021*(1), 2183–2203

Anderson, T., Garrison, D. R., Archer, W., & Rourke, L. (2000). Methodological issues in the content analysis of computer conference transcripts.

Asghar, M., & Rowe, N. (2017). Reciprocity and critical reflection as the key to social justice in service-learning: A case study. *Innovations in Education and Teaching International, 54*(2), 117–125.

Ayers, W., Hunt, J. A., & Quinn, T. (1998). *Teaching for Social Justice. A Democracy and Education Reader*. New Press, 450 West 41st Street, New York, NY 10036.

Ayub, A., Gul, R., Ali, A., Rauf, B., M. (2021). Cultural and Educational Stress: A Case Study of Brahui Speaking ESL and EMI Periphery Students. *Asian EFL Journal. 28*(2.3). https://www.elejournals.com/asian-efl-monthly-editions/aej-monthly-edition-2021/volume-28-issue-2-3-april-2021/

Battistoni, R. M. (1997). Service-learning and democratic citizenship. *Theory into Practice, 36*(3), 150–156.

Barab, S. A., Thomas, M. K., & Merrill, H. (2001). Online learning: From information dissemination to fostering collaboration. *Journal of Interactive Learning Research, 12*(1), 105–143.

Barab, S. A., Gray, J. H., & Kling, R. (2004). Designing for virtual communities in the service of learning. Cambridge, UK; New York: Cambridge University Press.

Blankson, A. N., Rochester, S. E., & Watkins, A. F. (2015). Service-learning and civic responsibility in a sample of African American college students. *Journal of College Student Development, 56*(7), 723–734.

Borras Jr, S. M., Moreda, T., Alonso-Fradejas, A., & Brent, Z. W. (2018). Converging social justice issues and movements: implications for political actions and research.

Boyle-Baise, M., & Langford, J. (2004). There are children here: Service learning for social justice. *Equity & Excellence in Education, 37*(1), 55–66.

Brookfield, S., & Preskill, S. (1999). *Discussion as a way of teaching: Tools and techniques for university teachers*. McGraw-Hill Education (UK).

Bukhari, S. K. U. S., Gul, R., Bashir, T., Zakir, S., Javed, T. (2021). Exploring managerial skills of Pakistan Public Universities (PPUs)' middle managers for campus sustainability. *Journal of Sustainable Finance & Investment*, 1–19 https://doi.org/10.1080/20430795.2021.1883985

Carrington, S., & Selva, G. (2010). Critical social theory and transformative learning: Evidence in pre-service teachers' service-learning reflection logs. *Higher Education Research & Development, 29*(1), 45–57.

Carnicelli, S., & Boluk, K. (2017). The promotion of social justice: Service learning for transformative education. *Journal of Hospitality, Leisure, Sport & Tourism Education, 21*, 126–134.

Cranton, P. (2006). Fostering authentic relationships in the transformative classroom. *New Directions for Adult and Continuing Education, 2006*(109), 5–13.

Crawford, S. P. (2011). The new digital divide, The New York Times, SR1, available at: https://www.nytimes.com/2011/12/04/opinion/sunday/internet-access-and-the-new-divide.html?pagewanted=all&_r=0 (accessed 3 January 2020).

Chiva-Bartoll, O., Moliner, M. L., & Salvador-García, C. (2020). Can service-learning promote social well-being in primary education students? A mixed method approach. *Children and Youth Services Review*, *111*, 104841.

Dameris, L., Frerker, H., & Iler, H. D. (2019). The Southern Illinois Well Water Quality Project: A Service-Learning Project in Environmental Chemistry. *Journal of Chemical Education, 97*(3), 668–674.

Donaldson, L. P., & Daughtery, L. (2011). Introducing asset-based models of social justice into service-learning: A social work approach. *Journal of Community Practice, 19*(1), 80–99.

de Montes, L. S., Oran, S. M., & Willis, E. M. (2002). Power, language, and identity: Voices from an online course. *Computers and Composition, 19*(3), 251–271.

Einfeld, A., & Collins, D. (2008). The relationships between service-learning, social justice, multicultural competence, and civic engagement. *Journal of College Student Development, 49*(2), 95–109.

Faulconer, E. (2020). eService-Learning: A Decade of Research in Undergraduate Online Service-learning. *American Journal of Distance Education*, 1–18.

Foli, K. J., Braswell, M., Kirkpatrick, J., & Lim, E. (2014). Development of leadership behaviors in undergraduate nursing students: A service-learning approach. *Nursing Education Perspectives, 35*(2), 76–82.

Guetterman, T. C., Fetters, M. D., & Creswell, J. W. (2015). Integrating quantitative and qualitative results in health science mixed methods research through joint displays. *The Annals of Family Medicine, 13*(6), 554–561.

Gul, R., Zakir, S., Ali, I., Karim, H., & Hussain, R. (2021a). The Impact of Education on Business Opportunities for Women Entrepreneurs in Public & Private Television Advertisements in Pakistan. *Industrial Engineering & Management Systems, 20*(2), 140–147.

Gul, R., Talat, M., Mumtaz, M., Shaheen, L. (2021b). Does Intelligence Matters in Teaching Exploring the Impact of Teachers Intelligence on Teaching Pedagogies of Secondary School Science Teachers. *Multicultural Education*, *7*(3). https://doi.org/10.5281/zenodo.4647944

Gul, R., Ayub, A., Mazhar, S., Uddin, S., S., Khanum, M. (2021c). Teachers' Perceptions on Students' Cultural and Linguistic Diversity and its Impact on their Approaches towards Culturally Teaching Practices. *TESOL International Journal*, *16*(3.2).

Gul, R., Kanwal, S., Khan, S. S., (2020a). Preferences of the teachers in employing revised blooms taxonomy in their instructions Sir Syed. *Journal of Education & Social Research*, *3*(2), 258–266. 139-ArticleText-1546-2-10-20200702.pdf

Gul, R., Khan, S. S., & Akhtar, S. (2020b). Organizational Politics as Antecedent of Stress in Public Sector Universities of Khyber Pakhtunkhwa. *International Review of Management and Business Research, 9*(2), 150–161. https://doi.org/10.30543/9-2(2020)-1I

Gul, R., Khilji, G. (2021). Exploring the need for a responsive school curriculum to cope with the Covid-19 pandemic in Pakistan. *Prospects*. https://doi.org/10.1007/s11125-020-09540-8. Link: https://core.ac.uk/download/pdf/228237475.pdf

Gul, R., Tahir, T., & Ishfaq, U. (2021d). Teaching as a Profession, Exploring the Motivational Factors, and the Motives to Stay in the Field of Teaching. *Ilkogretim Online - Elementary Education Online, 20*(4), 1407–1412.

Gul, R., & Rafique, M. (2017). Teachers Preferred Approaches towards Multiple Intelligence Teaching: Enhanced Prospects for Teaching Strategies. *Journal of Research & Reflections in Education (JRRE), 11*(2), 197–203. http://www.ue.edu.pk/jrre

Guthrie, K. L., & McCracken, H. (2010). Teaching and learning social justice through online service-learning courses. *International Review of Research in Open and Distributed Learning, 11*(3), 78–94.

Guba, E. G., & Lincoln, Y. S. (2005). Paradigmatic Controversies, Contradictions, and Emerging Confluences. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage*.

Groh, C. J., Stallwood, L. G., & Daniels, J. J. (2011). Service-learning in nursing education: Its impact on leadership and social justice. *Nursing Education Perspectives, 32*(6), 400–405.

Harro, B. (2000). The cycle of socialization. In M. Adams, W. J. Blumenfeld, R. Castaneda, H. W. Hackman, M. L. Peters, & X. Zuniga (Eds.), *Readings for diversity and social Justic*e (pp. 15–21). New York: Routledge.

Holland, B., & Robinson, G. (2008). Community-Based Learning with Adults: Bridging Efforts in Multiple Sectors. *New Directions for Adult and Continuing Education, 118*, 17–30.

Huda, M., Maseleno, A., Atmotiyoso, P., Siregar, M., Ahmad, R., Jasmi, K., & Muhamad, N. (2018). Big data emerging technology: Insights into the innovative environment for online learning resources. *International Journal of Emerging Technologies in Learning (iJET), 13*(1), 23–36.

Kanuka, H. (2008). Understanding e-learning technologies-in-practice. *The theory and practice of online learning*, 91.

Kincheloe, J. L. (2004). *Critical pedagogy primer.* New York: Peter Lang.

Kirkland, D. E. (2014). They look scared": Moving from service learning to learning to serve in teacher education—a social justice perspective. *Equity & Excellence in Education, 47*(4), 580–603.

Kirlin, M. (2003). The role of civic skills in fostering civic engagement. No. 6). University of Maryland: Center for Information and Research on Civic Learning and Engagement. (CIRCLE).

Kvale, S. (1996). The 1,000-page question. *Qualitative Inquiry, 2*(3), 275–284.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge university press.

Marcus, V. B., Atan, N. A., Yusof, S. M., & Tahir, L. (2020). A systematic review of e-service learning in higher education.

Maicas, S., Fouz, B., Figàs-Segura, À., Zueco, J., Rico, H., Navarro, A., & Biosca, E. G. (2020). Implementation of Antibiotic Discovery by Student Crowdsourcing in the Valencian Community Through a Service Learning Strategy. *Frontiers in Microbiology, 11*, 2956.

Malvey, D. M., Hamby, E. F., & Fottler, M. D. (2006). E-service learning: A pedagogic innovation for healthcare management education. *Journal of Health Administration Education, 23*(2), 181–198.

Mandell, A., & Herman, L. (2007). The study and transformation of experience. *Journal of Transformative Education, 5*(4), 339–353.

Merryfield, M. (2003). Like a veil: Cross-cultural experiential learning online. *Contemporary Issues in Technology and Teacher Education, 3*(2), 146–171.

Merryfield, M. M. (2006). WebCT, PDS, and democratic spaces in teacher education. *International Journal of Social Education*, *21*(1), 73–94.

Meyers, S. A. (2008). Using transformative pedagogy when teaching online. *College Teaching, 56*(4), 219–224.

Myers, M. D. (2020). Student Development in Service-Learning: A Literature Review of Service Learning and Self-authorship. *College Student Journal, 54*(1), 126–140.

Mitchell, T. D. (2015). Using a critical service-learning approach to facilitate civic identity development. *Theory into Practice, 54*(1), 20–28.

Mitchell, T. D. (2007). Critical service-learning as social justice education: A case study of the citizen scholars program. *Equity & Excellence in Education, 40*(2), 101–112.

Palloff, R. M., & Pratt, K. (2007). *Building online learning communities: Effective strategies for the virtual classroom*. John Wiley & Sons.

Piol, M. N., Saralegui, A., Orero, G., Boeykens, S., Basack, S., & Vullo, D. L. (2019). Improvement of laboratory skills of Chemical and Civil Engineering students using an interdisciplinary service-learning project for water quality and supply assessment in low-income homes. *FEMS microbiology letters*, *366*(12), fnz143.

Poole, K. D., Berson, M. J., & Levine, P. (2011). On becoming a legislative aide: Enhancing civic engagement through a digital simulation. *Action in Teacher Education., 32*(4), 70–82.

Roodin, P., Brown, L. H., & Shedlock, D. (2013). Intergenerational service-learning: A review of recent literature and directions for the future. *Gerontology & Geriatrics Education, 34*(1), 3–25.

Rovai, A. P. (2002). Building a sense of community at a distance. *The International Review of Research in Open and Distributed Learning*, *3*(1).

Saltmarsh, J., & Zlotkowski, E. (2011). *Higher education and democracy: Essays on service-learning and civic engagement*. Temple University Press.

Salam, M., Iskandar, D. N. A., Ibrahim, D. H. A., & Farooq, M. S. (2019a). Technology integration in service-learning pedagogy: A holistic framework. *Telematics and Informatics, 38*, 257–273.

Salam, M., Iskandar, D. N. A., Ibrahim, D. H. A., & Farooq, M. S. (2019b). Service-learning in higher education: A systematic literature review. *Asia Pacific Education Review, 20*(4), 573–593.

Saitta, E. K. H., Bowdon, M. A., & Geiger, C. L. (2011). Incorporating service-learning, technology, and research supportive teaching techniques into the university chemistry classroom. *Journal of Science Education and Technology, 20*(6), 790–795.

Schmidt, E., Vik, R., Brubaker, B. W., Abdulahad, S. S., Soto-Olson, D. K., Monjure, T. A., & Jayawickramarajah, J. (2020). Increasing Student Interest and Self-Efficacy in STEM by Offering a Service-Learning Chemistry Course in New Orleans. *Journal of Chemical Education, 97*(11), 4008–4018.

Stefaniak, J. (2020). A systems view of supporting the transfer of learning through e-service-learning experiences in real-world contexts. *TechTrends, 64*(4), 561–569.

Stewart, T. (2012). Classroom teacher leadership: Service-learning for teacher sense of efficacy and servant leadership development. *School Leadership & Management, 32*(3), 233–259.

Stanton, T. K., Giles Jr, D. E., & Cruz, N. I. (1999). *Service-Learning: A Movement's Pioneers Reflect on Its Origins, Practice, and Future. Jossey-Bass Higher and Adult Education Series*. Jossey-Bass Inc., Publishers, 350 Sansome St., San Francisco, CA 94104.

Sze-Yeung Lai, C., & Chi-leung Hui, P. (2020). Service-learning: impacts of learning motivation and learning experience on extended social/civic engagement. *Higher Education Research & Development*, 1–16.

Tatum, B. D. (2000). The complexity of identity: Who am I? In M. Adams, W. J. Blumenfeld, R. Castaneda, H. W. Hackman, M. L. Peters, & X. Zuniga (Eds.), *Readings for diversity and social justice* (pp. 9–15). New York: Routledge.

Tseng, H., Ku, H. Y., Wang, C. H., & Sun, L. (2009). Key factors in online collaboration and their relationship to teamwork satisfaction. *Quarterly Review of Distance Education*, *10*(2).

Tinkler, B., Hannah, C. L., Tinkler, A., & Miller, E. (2014). Analyzing a service-learning experience using a social justice lens. *Teaching Education, 25*(1), 82–98.

Tomat, E. (2020). Chemistry Discovery: A Service-Learning Outreach Course Produces a Workshop Series for Middle-School Students. *Journal of Chemical Education, 97*(11), 4019–4025.

Waldner, L., McGorry, S., & Widener, M. (2010). Extreme e-service learning (XE-SL): E-service learning in the 100% online course. Creative Commons Attribution.

Walcott, R. (1994). Serials Cited by Marine Sciences Research Center Faculty, University at Stony Brook, 1986–1991. *Science & Technology Libraries, 14*(3), 15–33.

Warschauer, M. (2003). *Technology and social inclusion: Rethinking the digital divide*. MIT Press.

Wray-Lake, L., Arruda, E. H., & Schulenberg, J. E. (2020). Civic development across the transition to adulthood in a national US sample: Variations by race/ethnicity, parent education, and gender. *Developmental Psychology, 56*(10), 1948.

Yosso, T. J. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race Ethnicity and Education, 8*(1), 69–91.

Zickuhr, K., & Smith, A. (2012). A. Digital differences. Pew Internet and American Life Project, Pew Research Center. Retrieved from http://pewinternet.org/Reports/2012/Digitaldifferences.aspx