RESEARCH ARTICLE

Students’ perceptions on community-based education at Avalon University School of Medicine during the first two years of the program [version 2]

Sateesh Babu Arja, Sireesha Bala Arja, Venkata Anirudh Chunchu, Narendra Sai Varma Datla, Archana Bottu

Avalon University School of Medicine

Abstract
This article was migrated. The article was marked as recommended.

Objectives
The socio-cultural learning theory can be divided into a social and cultural process. Learner's learning occurs within the context rather than anticipating and preparing for the future context. It may happen in the workplace through apprenticeship, experiential learning, or community-based learning. Community-based education and community services have always been part of the students' volunteer services at Avalon University School of Medicine. The importance of community-based education has led to its recent integration into the curriculum. The objective of this study is to observe the community services in the field and to record the perceptions of students regarding community-based education at Avalon University School of Medicine.

Methods
This is a qualitative study. The research was conducted in the form of an observational study and framework analysis was done. The community-based education and community services were observed and recorded along with individual interviews. Students from different semesters were selected randomly for the interviews. The interviews were audio-recorded and transcribed.

Results
All interviewed students (100%) reported that they are involved in
community services. 53.8% of students were not able to recognize the health issues of Curacao. 84.6% of students recognized and acknowledged the local health issues after reminding them of the activities conducted in the community services. 84.6% of students believed community services enhanced their clinical skills and increased their confidence in communication skills.

Conclusion

Community-based education enhances the competency of future physicians in clinical and communication skills.

Keywords
clinical skills, community services, communication skills, community-based education, and experiential learning.
Introduction
One of the common problems that are encountered during the training of junior doctors and post graduation programs is that the doctors struggle with advising patients in a local socio-cultural context. These issues may stem from miscommunication or a lack of understanding the local culture. The community-based education enables medical students to understand the societal needs and social factors influencing the health and illnesses. Participation in outside-classroom teaching and involvement in community services with the population who lacks health literacy in the pre-clerkship years increases the confidence and better communication skills (Milford et al., 2016).

The current medical profession and healthcare services face a disparity in physician distribution and healthcare services between rural and urban areas. Early exposure to the community in medical programs and involvement in the rural community may motivate medical students to practice in rural areas (Budhathoki et al., 2017). The community-based education in the undergraduate medical curriculum also promotes the contribution to the local health services and aids the community health needs (Atuyambe et al., 2016).

Talaat and Ladhani provide a concise historical account of CBE in the health professions (Talaat and Ladhani, 2014). They state that: Community Based Education (CBE) is a form of instruction in which students learn professional competencies in a community setting, helping to build a sense of connection with their communities. CBE is a popular approach for all forms of education and for all age groups, especially at higher education levels where its primary purpose is to foster interdependence between education and communities, leading to improved quality of life. John Hopkin’s definition of Community Based Learning (CBL) Working Group states “it is a pedagogical model that connects classroom-based work with meaningful community involvement and exchange.”

Medical students should start understanding patients’ cultures and beliefs related to their health and illnesses from pre-clinical years. The understanding should be encouraged through the curriculum and planned learning experiences. The curriculum should offer opportunities for experiential learning. Community-based education teaches and trains students to understand the social and cultural context of patients’ principles regarding the health beliefs.

Understanding of societal factors should be integrated into the curriculum in the form of both theoretical knowledge and practical learning opportunities. Students should have service-learning experiences throughout the curriculum. The students should be informed about the community strengths and the population health aspects of the community, too. Service-learning is a teaching and learning strategy that integrates meaningful community service with instruction. It enriches the learning experience, teaches civic responsibility, and strengthens communities, according to the National Service-Learning Clearinghouse’s definition (Service learning, 2012).

Learning in the community is as effective as learning in the clinical skills labs and hospital systems (Murray, Jolly and Modell, 1997). Community-based education also fosters experiential learning. This experiential learning can be related to Kolb’s experiential learning (Kolb, 1984; Kolb and Kolb, 2005).

The below figure 1 summarizes of benefits of community-based education.

Background
Avalon University School of Medicine was established in 2003 on the island of Bonaire. The university relocated to Curacao in 2010. The community-based education and community services have been a part of Avalon University School of Medicine since its inception. The curriculum of Avalon University School of Medicine has been recently reviewed and changed from a discipline-based curriculum to an integrated curriculum. During the process of the change, the community-based education and service learning has become a mandatory part of the curriculum. The university realized the importance of community-based education for the reasons mentioned above in addition to the recognition of social accountability of the educational institutions (Boelen and Heck, 1995; Boelen and Woollard, 2009; Global Consensus for Social Accountability of Medical Schools, 2010).

Community-based education and community services are part of the curriculum and are included in the Clinical Skills course. The Clinical Skills course is placed longitudinally throughout all semesters of the basic sciences program. The curriculum committee placed the community-based education longitudinally along with clinical skills. Longitudinal experiences are more beneficial than snap-shot learning experiences. The university developed and adopted a basic framework to carry out community-based education in the first two years of the program.

Methods
This research study is a qualitative and framework analysis was done. An observational study was conducted to analyze the activities involved in the community-based education and community services and the data was recorded. Pictures
were taken while observing the activities. Consent was taken for all identifiable persons in the pictures. Students from the second-semester and the fourth-semester were interviewed individually. Consent was taken from all participants and it was informed that interviews will be kept anonymous. Student interviews are numbered as student #1, student #2 and no personal information is identified. Participation in the interviews was voluntary and all students were given the option of not to participate. All individual interviews were audio-recorded and later on, they were transcribed.

Student selection for the interview process was randomized instead of the purposive sampling. Every third student in the fourth-semester was interviewed based on alphabetical order. Seven students (three male and four female) were interviewed. Among the second-semester students, we skipped selecting the first student on the alphabetical order and then interviewed every alternative student. Students in alphabetical order interviewed are 2nd, 3rd, 5th, 7th, 9th, and 11th student (3 male and 3 female students). Students of second-semester are interviewed by the first-year medical student and

Figure 1. Beneficial effects of community-based education and activities

Figure 2. Framework adopted by the University for community-based Activities and education

were taken while observing the activities. Consent was taken for all identifiable persons in the pictures. Students from the second-semester and the fourth-semester were interviewed individually. Consent was taken from all participants and it was informed that interviews will be kept anonymous. Student interviews are numbered as student #1, student #2 and no personal information is identified. Participation in the interviews was voluntary and all students were given the option of not to participate. All individual interviews were audio-recorded and later on, they were transcribed.

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students of fourth-semester are interviewed by the second year medical students. The interviewed students are diverse and representative of the total Avalon University School of Medicine population.

Results/Analysis

Observational Study

Identifying the health needs of the community

The medical school identified the health needs of the community to include overweight/obesity, diabetes, and hypertension. The identification was based on the data released by National Health Survey 2017, a survey released by the Ministry of Health, Curacao (Curacao Chronicle, 29th January 2018). According to the survey, 65% of the island population is either overweight or obese. Being overweight or obese is the predisposing factors to hypertension and diabetes. The factors leading to being overweight or obese are including, but not limited to, genetic factors, sedentary lifestyles, and dietary habits.

Connecting classroom activities with the community services

Students are trained on how to measure the blood pressure, body mass index, and blood glucose in the classroom. Students are also trained on history taking and communication skills in the Clinical Skills course. In addition to classroom training, students are trained in practice sessions before each community activity. We observed three of these training sessions. Students are divided into groups and trained on these activities in a professional manner. Students practice these skills on standardized patients.

| Cohort            | Total # | Female | Male | Caucasian | Hispanic | African | Asian |
|-------------------|---------|--------|------|-----------|----------|---------|-------|
| 2nd Semester      | 11      | 6      | 5    | 0         | 1        | 2       | 8     |
| 4th Semester      | 21      | 9      | 12   | 2         | 0        | 2       | 17    |

Figure 3. Students getting trained inside the classroom on standardized patients
Students Involvement in Community Activities and Community Benefits

Students don’t visit the individual homes, and they do conduct the community services in local communities. The university administration in conjunction with the course director of the clinical skills selects the community that they would like to visit and inform them in advance. They reach out to local churches, small underserved or unprivileged communities, supermarkets, schools, nursing homes, orphanages, and other NGO organizations. The students do Body

Figure 4. Students involved in community services

Figure 5. Happy community member posing with one of the students of Avalon University School of Medicine
Mass Index (BMI) screening, blood glucose, and blood pressure. Students not only practice these skills, but also practice the skills like history taking, communication, counseling the public regarding the health issues, and leadership skills. Every student participates in community services once a semester which gives an opportunity for students to involve in community services at least four times while they are on the basic sciences campus.

We observed students of Avalon University School of Medicine involving themselves in community activities several times. The services provided by Avalon students are: screening the public for body mass index, blood glucose, and blood pressure. The population was counseled regarding lifestyle, diabetes, hypertension, obesity, and modifiable risk factors. This provided an opportunity for the students to understand the societal needs and healthcare issues. Students build communication skills, professionalism, and leadership skills; priming to become better physicians. This also fulfills the social responsibility and social accountability of the medical school towards the community and local health need to some extent.

**Individual student interviews**
A total of 13 Students were interviewed individually and the following questionnaire was used. The questionnaire was created based on the framework developed by the university regarding community-based education. The questions are both yes/no and open-ended questions. Students were asked about their experiences and were encouraged to give descriptive answers.

- Have you ever participated in community services at Avalon?
- Do you know the health issues of Curacao? If yes, please explain.
- You are doing BMI, and measuring blood pressure and blood glucose. The health issues of Curacao community include overweight/obesity, diabetes, and hypertension. Do you recognize them and relate with your activities in the community? This question was included to see if students can recall the health needs of the community.
- Do you think that you were trained in the classroom on how to measure BMI, blood glucose, and blood pressure? Please explain.
- Have you ever thought that participating in community services increase your clinical skills and enhance the confidence in communication skills and advising the patients in the local socio-cultural context? Please describe your experiences.
- Are you getting a grade or assessed based on the involvement in community services?
- Do you need a feedback after every community activity? Please comment on how you want to receive the feedback and what kind of feedback are you expecting?

Student responses are tabulated ([Table 2](#)).

**Discussion**
Students’ responses were analyzed. 100% of the students responded that they were involved in community services and community-based education. Students responses are tabulated. Even though this is a qualitative-based research, the statistical significance was taken into consideration based on the students’ responses yes or no. Students’ responses are audio-recorded and transcribed. Students’ responses are categorized into four themes.

**Students’ awareness of health issues in Curacao**
Seven out of thirteen students (53.8%) answered that they were not aware of the health issues in Curacao, even though some of them acknowledged the health issues after a reminder of the health issues they encountered while interacting with the local communities. It is required by the instructors to inform the students why the university has chosen certain activities: this community-based education/activity must address the local health issues as part of the social responsibility. Eleven out of thirteen students (84.6%) recognized and acknowledged the health issues of the island after reminding them what they have done during the community services.
Classroom training and connecting classroom activities with community services

Twelve out of thirteen (92.3%) students recognized that they were trained, and classroom activities are connected to the community services.

Students’ perception regarding community services-benefits to the students and to the community.

Eleven out of thirteen students (84.6%) felt that community-based education and community activities enhance their clinical skills and improve their overall communication skills. Students also felt that working with the community and the real patients are different from working with standardized patients in the classroom. Working with the actual community gives them a better hands-on experience. They also felt that working in the community better prepares them for the hospital setting rather than a comfortable classroom setting. One of the students also felt that helping the community in reaching health goals is also part of being a doctor. One student also quoted that community-based education can help with understanding the local culture and context. Two students are not that positive about community services whose primary concern is the language barrier.

The following are the quotes of the students in their own words:

“It’s the biggest part of being a doctor, being able to be part of the community and help in achieving the community health goals.”

“You go out and actually meet people at random and help with actual health problems. For example, the first time I ran into this lady that had diabetes, she was not looking after herself at all. The same thing happened with the second activity we did. We had this patient, with the edema of her foot. I don’t know if they are actually following advice and going to their doctors after that, but at least you can see that there are things that you can identify for them. Let them know they have something and need treatment or let them at least know they have something they need to pay attention to.”

“Working with standardized patients in clinical skills is entirely different. We talk to the standardized patients all the time and become our friends. We can be however we want, act however we want. And they give us pointers. We see them all the time. Talking to somebody out there, especially when they don’t know English, where you have to translate, and do everything, and think on your feet is a lot different. I think that helps a lot. It gives us a chance to interact with patients and regular people you don’t get to see. It makes you think on your feet. You get to see regular patients, which we don’t always get a chance to see in the basic sciences.”

Table 2. Students’ responses collected through individual interviews.

| Student Number | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|----------------|---|---|---|---|---|---|---|---|---|----|----|----|----|
| Participation in Community Services | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Aware of Health issues of Curacao | Yes | Yes | Yes | Yes | No | No | Yes | No | No | Yes | No | No | No |
| Recognized the Health Issues After Reminding | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No | No | Yes | Yes | Yes | Yes |
| Classroom Activities and Training | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes |
| Positive Perception of Community activities | Yes | Y/N | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes |
| Assessment | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes | Yes |
| Do the Students Need Feedback? | No | Yes | No | Yes | Yes | Yes | No | No | No | Yes | Yes | Yes | Yes |
“I personally really enjoyed it. I think we should be doing more things like that. It gives the students an overall image of where they’re heading. It gives overall motivation, which is important in such a fast-paced program like this. It is something that is really important because you need to compound on your skills and get better”.

“In a classroom, you are with people that you are comfortable with like your classmates. Outside, you have to actually describe what you are doing, that could be hard to practice on... One thing I noticed from the community activity that we did: there was a lot of noise in the background. You were not actually able to hear the tick to calculate the blood pressure. So being outside in the real-world helps in developing your skills... Even in hospitals, sometimes things could happen. So, if you are prepared for any sort of situation and I think community services help with that.”

“It helped to understand the local culture. These services taught me the importance of local culture and working within the cultural context.”

“Aside from studying and books, it’s hands on. Instead of working and books, you get to see what you’ve signed up to do for the rest of your life.”

As mentioned in table 2, two out of thirteen students were not positive about community services really can help with improving communication skills or not? One student was equivocal about community services. Their main concern is the language barrier, even though most of the population on the island speaks English. Here are their comments in their own words:

“Community services do and it doesn’t help with communication because we aren’t speaking the native language. So, we can’t really communicate properly with patients i.e. residents that come to us at the community services. But it is a good way to enhance and teach us how to talk to people that don’t necessarily speak the native language, which should be useful in the hospital that teaches us on how to take blood pressure and comfort the patient in a way and build up our skills as training physicians on how to take vitals”.

“To be honest, for me, no. Because you know especially on this island, their primary language is very different from mine, so I don’t feel it enhances my communication skills. Again, not because there is a strong language barrier”

Assessment and Feedback

Regarding the assessment, twelve out of thirteen students (92.3%) felt that they were assessed based on the community services and they were given a grade based on their involvement in the activities. Regarding the feedback, seven out of thirteen students (53.8%) would like to have a feedback regarding their performance in community activities. But the other six students felt that it is not necessary for them.

Here are some comments from students in their own words regarding feedback:

“I guess I would want it incorporated in class, like the same way in what we do in clinical skills practice. I would like the teacher to come to me and say these are the negatives and positives. These are the things that have to change. I would just want them to be honest and direct.”

“I don’t think feedback can hurt. That’s for sure. I’m always looking to improve or learn or anything like that. If I’m doing something wrong or could be done better. Forget about doing anything wrong. Even if it’s doing better, I’d be open to it”.

“I would say maybe through email if you have a report or maybe you as a professor call them as students and ask questions and maybe discuss with them”.

Conclusion

Based on the results, students appreciate community-based education and involvement in community services. The early exposure of medical students to the community and general population is crucial in enhancing their clinical skills, communication skills, and building their confidence as future physicians. Even though the language barrier may limit some aspects of community-based education, translators are a viable solution. At our university, this problem can be easily solved because: the majority of the population can speak English, and our standardized patients are locals that can aid in translation. The university uses local personnel as standardized patients in clinical skills. The university started using these standardized patients as translators during the community services. And also the university made assessment and feedback as mandatory. Previously the instructors were assessing the students during community services, but now the instructors of clinical skills are also providing feedback as mandatory.
Take Home Messages

- Involving in community-based education (CBE) enhances clinical skills as they are exposed to the real world. CBE can be helpful, especially in circumstances where students are not exposed to real patients, aside from standardized patients in the first two years of the medical program.
- CBE helps in developing communication skills and fostering the confidence of future physicians.
- CBE can help in understanding the societal factors and working in the cultural context.
- Translators can be helpful if there are any language barriers to conduct community-based activities.
- Assessment and feedback should be part of the community-based education.

Notes On Contributors

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Mr. Venkata Anirudh Chunchu, 2nd-year medical student.

Mr. Narendra Sai Varma Datla, 2nd-year medical student.

Ms. Archana Bottu, 1st-year medical student.

Declarations

The author has declared that there are no conflicts of interest.

Ethics Statement

Ethics approval was received from the Avalon University School of Medicine Research and Ethics Committee. And also we took the consent from students and other members who are identifiable in the pictures.

External Funding

This article has not had any External Funding

Acknowledgments

Mr. Abraham Ratna Joseph Nayakanti, Assistant Professor of Histology and Developmental Anatomy, Avalon University School of Medicine

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Open Peer Review

Migrated Content

**Version 2**

Reviewer Report 05 April 2019

https://doi.org/10.21956/mep.20226.r31328

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**Flora Smyth Zahra**
Faculty of Dentistry, Oral & Craniofacial Sciences. King's College London

This review has been migrated. The reviewer awarded 4 stars out of 5

I enjoyed this CBE paper very much and wish you well with your co-created programme. Your students obviously have benefited from the experience. It would be great if we all could drop the term standardised patient. I know its a very common term, but along with Human Factors skills and worse still 'soft skills' I wish we could work to improve them as they are all discordant to me in the context of person-centred care.

**Competing Interests:** No conflicts of interest were disclosed.

Reviewer Report 24 October 2018

https://doi.org/10.21956/mep.20226.r31331

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**Tharin Phenwan**
University of Dundee

This review has been migrated. The reviewer awarded 3 stars out of 5

This article assessed undergraduate medical students' perception of Community-Based Education (CBE). There were gaps in the lack of understanding of the local contexts in the current medical curriculum. Thus, the authors proposed to use CBE approach to build a sense of connection to the community.-This
second version of the revised manuscript was well-described. The authors wrote with a good narrative writing style with a clear background of the context of their medical school, their curriculum, and rationale to use CBE. It is very pleasing to see that some medical students were involved in this work as the authors. This experience will be a good foundation for their research skills and enhance their profiles as well. CBE plays a huge role in 21st-century learning skills, especially on Collaboration and Communication skills component. Practical assessment of this method will be useful in the education field. However, How did the authors ensure the quality of the interviews? Was there any training session for them? You mentioned that the participation was voluntary, but another paragraph stated that it was randomised by every third student. Could you clarify this? Did you mean by every third of the whole class or every third of the willing participants? The student selection for the interview part was also hard to follow with the current description. Another figure or diagram may help the readers grasp this more easily. Most of the results section should be under the methods section as it will provide a clearer understanding to the readers. For example, the connecting classroom activities with the community services section was the description of how you prepared and validated the students before they went into the community. These descriptions were not what you did to the community but rather what you prepared before you took the students into the community. The discussion section should focus more on the analysis and discussions of your findings, i.e. from these students' comments, most of them had a positive experience about CBE. Why is that? Is it related to Kolb's learning theory or others? You can also select a few of the high-lighted quotations with important findings and put them into themes under one table to make it easier to follow-through. This paper mentioned the cultural influence a few times. Could you add some examples of how culture would affect the patients and medical students in their learning experience and also the junior doctors? You can also add more reference from Hofstede's work on six dimensions of national culture for the cultural framework. Overall, the authors used CBE to help medical students learn from the community and participants had a positive experience from this approach. Future works could follow this group of students to see their academic achievement. More works that compare between CBE and other learning methods of the students' learning outcome are also recommended. This article is suitable for educators who emphasised on experiential learning and community-based learning despite some methodological limitations.

**Competing Interests:** No conflicts of interest were disclosed.

Reviewer Report 15 October 2018

https://doi.org/10.21956/mep.20226.r31327

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Trevor Gibbs
AMEE
This review has been migrated. The reviewer awarded 3 stars out of 5

This is the second version of this authors paper. The authors as before should be congratulated on the initiative in taking the students out of the medical school environment and placing them in the real world of patient care. I have no doubt that the students enjoyed this activity and it gave everything a sense of purpose. However I think that the authors do need to be cautious about what they can draw upon as a result of this activity and their point "Based on the results, students appreciate community-based education and involvement in community services." - taken from their text- is probably appropriate. I do not though feel that they can place great importance in their other Take Home Messages, given that this small number of students and the evaluation methodology chosen, does not really support these statements. I am very sure that this is a learning situation for all the authors and I wish them well in developing their community-based education- I approach I very much feel is important.

**Competing Interests:** No conflicts of interest were disclosed.

Reviewer Report 01 October 2018

https://doi.org/10.21956/mep.20226.r31330

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Joy Cox
American University of Antigua

This review has been migrated. The reviewer awarded 4 stars out of 5

Thank you for contributing to the literature on Caribbean medical education. Community-based education is indeed a teaching and learning strategy that integrates community service with instruction and is important in experiential learning for undergraduate medical students. The paper is well written, and the introduction provides the context for the study and the theoretical framework. The methods section is concisely written and clearly describes student selection. The results and discussion adequately refer back to the theoretical framework and I like the use of individual students quotes to substantiate how students perceive the benefits of service learning opportunities. One comment I have is that it is recommended that you place supplementary materials, such as the photos, in the appendix, and refer to them, so they will not interfere with the flow of the passage for the reader.

**Competing Interests:** No conflicts of interest were disclosed.

Reviewer Report 23 September 2018

https://doi.org/10.21956/mep.20226.r31329
This review has been migrated. The reviewer awarded 5 stars out of 5

I had reviewed an earlier version of the manuscript and the changes the authors have carried out in the revised version further strengthen the manuscript. The manuscript is well written and I congratulate the authors on their efforts at educational innovation and scholarship under the resource-constrained environment of a Caribbean medical school. Figure 4 seems to be distorted which can be corrected. I also am pleased by the fact that students are involved as coauthors in this research paper. The manuscript will be of interest to all medical educators and of special interest to those teaching in Caribbean offshore medical schools.

**Competing Interests:** No conflicts of interest were disclosed.

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**Version 1**

Reviewer Report 07 September 2018

https://doi.org/10.21956/mep.19113.r27567

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**P Ravi Shankar**
American International Medical University

This review has been migrated. The reviewer awarded 4 stars out of 5

I enjoyed reading this article about community-based learning (CBL) at an offshore Caribbean medical school. Caribbean offshore schools face challenges with community involvement and in integrating and working with local health systems. Health camps are commonly used by schools to introduce students to the local community. A brief description of the community-based activities and education at Avalon University will be helpful. How do the students gain practical experience in the community? Do they conduct health fairs and camps or do they visit the individuals in their homes? The authors mention mainly three activities measuring BMI, blood glucose and blood pressure as connecting classroom learning with community practice. How frequently do students participate in community learning?
activities? What exactly do students do during the community encounters? The pictures add to the
description provided in the text. Community-based learning is becoming increasingly important for
offshore schools which face some unique challenges in this regard. Some of the quotes from the students
are better presented in the Results section. The authors have to be commended on their efforts and I
look forward to further developments in CBL at their institution.

**Competing Interests:** No conflicts of interest were disclosed.

Reviewer Report 04 September 2018

https://doi.org/10.21956/mep.19113.r27568

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**Trevor Gibbs**

AMEE

This review has been migrated. The reviewer awarded 2 stars out of 5

Community-based Education (CBE) is an important element of the curriculum and has been the subject of
many research papers that have demonstrated its positive effects. This paper appears to be an early
evaluation of a CBE programme, and a discussion as to whether the true outcomes, as reflected by the
small number of students, match the learning outcomes of the programme. The results from this piece of
evaluatory research are mixed. I found it quite difficult to differentiate between the quantitative and
qualitative elements of the results; clarity might have been better if the authors had themed the students’
responses. I would also have liked to have read how the School will deal with these results or how, as a
result of these results they can improve the programme and match the intended learning outcomes. I am
not sure that the Take Home Messages are easily derived from the research findings. I think that I should
also add that I do find it difficult to see how this paper relates to the Humanities theme.

**Competing Interests:** No conflicts of interest were disclosed.