

The benefits and challenges of student-led clinics within an Irish context

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Abstract: Student-led clinics are being established internationally as a means of practice education within a variety of disciplines. These clinics can provide opportunities for students in health care professions to have ‘real life’ clinic experiences while also providing beneficial outcomes for service users. This paper reviews the preliminary experiences from thirteen uni-disciplinary student-led clinics (thirty two students in total) in the disciplines of Occupational Therapy (OT), Speech and Language Therapy (SLT) and Physiotherapy (PT). These clinics were part of the placement experience of the students in an Irish University between 2011 and 2013. Clinical Education Quality Audit (CEQA) questionnaires (Ladyshefsky & Barrie, 1996) were used to explore the student experience of these placements, and practice educators were given an opportunity to discuss the benefits and challenges of the placements with the University Practice Education team. The data collected was analysed using thematic analysis. A number of themes emerged from the data: Environment, Organisational issues, Professional development / growth, and Relationships. These themes highlighted both positive and challenging features of the placement experiences. This paper will discuss the benefits and challenges of these student-led clinics and outline that overcoming challenges may be an additional important aspect of learning in innovative clinical experiences.

Keywords: practice education; innovative placement; student-led; supervisory relationship; professional development; learning process; inter-professional education

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Introduction

The Department of Clinical Therapies in the University of Limerick (UL) houses degree and masters professional qualification programmes for Physiotherapy (PT), Occupational Therapy (OT) and Speech and Language Therapy (SLT) students. The students who undertake these programmes complete a variety of practice education placements in accordance with the recommendation of each professional accreditation body. The UL practice education teams source and support placement sites in a variety of clinical/practice areas. Students are allocated to placement sites based on their learning needs and level of competency required. In order to maintain quality placement experiences for students a process of feedback and quality assurance is completed by the practice educators and students after each placement. This information is gathered using the Clinical Education Quality Audit (CEQA) tool (Ladyshewsky & Barrie, 1996).

A recent national review of practice education carried out in Ireland noted that there were challenges with acquiring appropriate placements in particular practice areas (Health Service Executive, 2011). This reflects similar challenges noted internationally for securing sufficient quality practice education experiences in student medical and health professional education (Frawkes et al., 2011). The national review in Ireland identified limited placement opportunities in specific practice areas, in particular Primary and Community and Continuing Care, as well as staff shortages, as factors that impacted on capacity for student placements (Health Service Executive, 2011).

These challenges were also experienced within the health professional programmes in the University of Limerick and were the catalyst to exploring new ways to meet students' educational needs on placement. Non-traditional placements have been a feature of Occupational Therapy education in UL since 2009 (Health Service Executive, 2011). Building on this experience the three professions (OT, PT and SLT) individually began to make links with external stakeholders and student-led clinics began to emerge within each of the disciplines.

Student-led clinics are a mode of healthcare delivery in which medical, nursing and or healthcare professional students take primary responsibility for the '*logistics & operational management*' of the clinic

(Simpson & Long, 2007). They are also commonly referred to as 'student-assisted clinics' or 'student-run' clinics (Frakes et al., 2011). Student-led clinics have become popular within medical education (Simpson & Long, 2007; Butala et al., 2013) and are developing within other healthcare professional education such as physiotherapy (Black et al., 2013) and inter-professional education (Reeves et al., 2002; Frakes et al., 2011). The objectives for these clinics allow the educational programmes to target specific skills development and/or real life experience in healthcare with a particular population or condition (Hughes et al., 2003; Black et al., 2013).

Inter-professional education has been shown to have a positive impact on student's learning, professional practice and patient care (Reeves et al. 2002). Unfortunately however, due to non-alignment of the three programmes at the University of Limerick until very recently, the PT, OT and SLT students have always been out on clinical placement in different weeks of the academic calendar. The lengths of the placements across the three disciplines also varied. This meant that although by coincidence, there was some overlap between disciplines for a few weeks of the year, this overlap often occurred between students at very different stages in their programmes. This was a significant barrier to providing inter-professional student learning as recommended by the WHO (Framework for action on inter-professional education and collaborative practice, 2010) and as described in the literature (Reeves et al., 2002, Moskovitz et al., 2006, Frakes et al., 2011). Therefore, the student-led clinics reviewed in this paper were all uni-disciplinary.

Frakes et al., (2011) provide an overview of the available evidence on the benefits of student-led clinics for the service users, the students and the educators. Service users reported increased satisfaction and perceived improved quality of care as well as time and attention spent on their healthcare needs. These placements can provide a service to disadvantaged and underserved populations (Moskowitz et al., 2006; Sheu et al., 2001). These placement structures were noted to improve student understanding of the psychosocial context of ill-health as well as their sense of responsibility for patient care and enhanced communication skills. The students experience also lead to greater self-worth, satisfaction, pride in the process of clinic development and altruism (Palombaro et al., 2011, Black et al., 2013, Frakes et al., 2011). Sheu et al. (2011) also reported enhanced clinical skills for students on

student-led placements. It has also been noted that such placements can develop leadership skills and improved competence in clinical and administrative skills (Black et al., 2013). Finally, Frakes et al. (2011) reported that supervisors positively viewed the student-led placement experience with reports of increased joy of practice and enhanced provider education.

In addition to the benefits outlined above, challenges in relation to student-led clinics have also been identified. These include issues with timetabling of curricula for inter-professional clinics as well as barriers regarding local service culture and lack of skills among educators (Capra, 2008 as cited in Frakes et al., 2011). Time is also noted as a challenge with regard to provision and processing of feedback, as well as for planning clinical activities Howell et al. (2011). Other constraints such as space, resources and equipment also emerge as themes within the study by Howell et al. (2011). Black et al. (2013) also noted in their research that only a portion of a student cohort could avail of the opportunity of student-led clinical placements and recognised the need to create additional, alternative opportunities.

In line with international recognition of the benefits of inter-professional education, the Department of Clinical Therapies has been moving towards a shared curriculum across the three disciplines. This move is providing the opportunity to learn from, with and about each discipline's professional role by establishing shared teaching in the classroom and on practice placement. Therefore it was decided to evaluate the work done so far in each individual discipline, from a student and educator perspective to inform future practice experiences.

Methodology

In late summer 2013, three members of the practice education team identified 13 small student-led clinics carried out as part of the student practice experience. These clinics are summarised in Table 1 overleaf. The researchers began to gather and analyse feedback from students and practice educators who had partaken in these initiatives.

Table 1 Overview of student-led clinics

Profession	Occupational Therapy		Physiotherapy	Speech & Language Therapy
Caseload	Voluntary Agency Homeless population in supporting accommodation.	Voluntary Agency Teenagers with complex social situations/ mental health challenges	Primary Care Setting Primarily musculo-skeletal and elderly rehab	Voluntary Agency Acquired Brain Injury
No. of Students	6 (1-2 per clinic)	4 (2 per clinic)	16 (4 per clinic)	6 (2 per clinic)
No. of clinics	4	2	2 per year x 2 years	1 per year x 3 years

Data collection

Feedback was gathered via the CEQA forms used within the three disciplines to quality assure placement experiences. The CEQA tool was developed in 1996 by Ladyshevsky and Barrie at Curtin University of Technology, Perth, Western Australia, to evaluate the quality of clinical learning experiences. The CEQA tool consists of 2 parts. Part A is a time sheet that is designed to capture data on workload productivity. Part B of the CEQA tool is used for quality assurance in the University of Limerick. It deals with student and practice educator perceptions of the teaching and learning experience. Twelve learning process statements, derived largely from the literature on best practice in clinical teaching, were designed to assess the quality of the teaching and learning experience. These statements are anchored on a 9-point Likert scale, with 1 being a negative outcome (disagree) and 9 being a positive outcome (agree). The learning process statements survey the following themes in clinical education: orientation, discussion of roles and expectations, goal setting, support from university and clinical facility, nature and quality of feedback, supervision, and learning opportunities.

In addition to the CEQA information, the practice educators who facilitated the student-led clinics (including the authors of this paper) gave additional reflections on their experience with these placements.

Data analysis

The data gathered from the practice educators and CEQA forms was analysed using qualitative thematic analysis employing Braun & Clarke (2006) methods modified to include Newell & Burnard (2006). The data was read through initially for a general overview. It was then re-read, at which point it was possible to generate an initial list of ideas. During this phase the initial codes, from the data, were produced. Codes represent a feature of the data that emerge as interesting to the analyst; they are the most basic element of the data that can be viewed in a meaningful way (Braun and Clarke 2006). When all of the data was initially coded and collated a list of different codes was generated from the data set. During this phase the analysis was refocused to a broader level and the different codes were sorted into potential themes. Themes were reviewed and refined and the validity of the individual themes in relation to the whole data set was considered. They were finally reviewed to ensure that sufficient evidence of the themes was demonstrated within the data.

Results

Exploring the feedback from both students and practice educators revealed a number of aspects of the placement experience that were common to both of these groups as well as differences between the groups.

Four key themes emerged: *Environment*, *Organisational issues*, *Professional development / growth*, and *Relationships*. These are defined below.

Environment

This theme is subdivided into the *learning environment* which facilitated the students' development of clinical and professional competency on placement and the *location/physical environment* of the student clinic.

Learning environment

The students repeatedly made reference to the supportive learning environment. Students from all three disciplines reported that staff at each

site was very welcoming and supportive. Students in the SLT student-led clinic stated that staff was '*very open to questions*'. This is also reported within the OT placement, where students referenced team-working and reported the site to have a very open, welcoming and motivated team.

There were positives and negatives in terms of feeling prepared for the learning environment. Students reported that the practice educators and the site prepared them extremely well for the scope of the site. This is balanced against one student reporting the '*big learning curve*' and the need for more support, especially in the early weeks of placement.

Location/Physical environment

SLT and PT educators reported the challenges which came from the physical environment, in particular, in relation to treatment space. This was especially problematic for PT students where 4 students were working with only 3 plinths. This automatically reduced their capacity to maximise treatment sessions.

The two SLT students were working in one small treatment room and this led to scheduling difficulties as they had to alternate their appointment times. However, these challenges required the students to consider ways to work around the difficulties, maximising time-frames, and utilising space more effectively.

The SLT students also reported challenges with preparation of therapy materials as there were no resources available in the external agency. This was in contrast to the experience of their student colleagues on traditional placement sites who had immediate access to a variety of resources on site. This difference required the students to be innovative, gather their own materials and arrive on site prepared to be flexible to step up or down their session plan for all therapy sessions.

Organisational issues

All three placements were established to meet the students' learning needs and four external agencies provided the space and facilities for the placements. The OT and SLT placements were introduced into sites that previously had no access to these professional services. The PT placement was located in a site where services had been temporarily affected due to staffing issues. Practice educators expressed concerns regarding the

duration of the placement and the service being provided for a specific time frame only. This presented challenges for timely identification and screening of referrals as well as onward referral to agencies and/or continuity of care at the end of the placement.

The placements were time-intensive for all practice educators. However, the practice educator who supervised one of the SLT placements reported that her time could be balanced out with greater flexibility to allow her to carry out other placement visits while the students worked under the supervision of the manager of the agency (who was not an SLT). This happened later in the placement when the students had developed the appropriate case management plans which had been agreed with the practice educator. This required the practice educator to provide additional hours to the students outside of their placement days to ensure adequate support and supervision in their preparation for the therapy sessions. This increased flexibility did not equate to reduced time spent working with the students.

Issues regarding caseloads emerged in all three placements. These issues varied for each discipline. The SLT students reported limited information being provided with the referrals and due to the nature of the placement there was limited background information available. The PT placement had difficulty maintaining sufficient numbers due to poor attendance issues at that placement site. One student referenced service user attendance in their feedback regarding ways in which the education experience could be further improved: *'the number of DNAs -if they could be decreased it would be great for learning experience'*. Many of the service users accessing this clinic were suspected to have literacy difficulties; this awareness encouraged the students to confirm new appointments via telephone on the morning of the initial assessment to encourage attendance. The students who attended the OT placement were tasked with identifying appropriate referrals as part of their learning experience. These students suggested that if a small group of referrals was identified before the placement, it would avoid a drawn out selection process once the placement started.

The practice educator supporting the physiotherapy placement expressed concern about keeping all four students busy while also providing adequate supervision. This was most relevant in the earlier weeks of placement when extra guidance was required during clinical activities with service users to ensure safe practice.

Professional development and growth

All students reported the placements provided a positive learning experience and referenced the great opportunities for learning, plenty of support from staff and supervisors with constructive feedback and improved confidence after the placement. The diversity of the individuals, who accessed the services provided as part of the placement, required the students to consider the different needs and approaches for each individual. As noted above the physiotherapy students developed additional skills in providing individual home exercise programmes taking into account literacy levels of service users and using pictures to aid understanding. This promoted an ethos of person-centred care in each of the placement sites. This was also noted by the practice educators as a positive outcome of the placement experiences. The students described an improved awareness of their own professional role as well as improved planning and intervention skills. One SLT student stated that the placement was ‘a *great opportunity to develop functional goals and integrate clinical and theoretical knowledge working with clients*’.

As all placements required the students to manage their own caseloads, the students noted improved organisational and administrative skills. The expectations as well as roles and responsibilities required for the student-led clinics were outlined from the start of the placement. This enabled the practice educators to establish trust in the students’ abilities, and give a greater level of independence than in traditional placement settings. These concepts of ‘*trust*’ and ‘*independence*’ emerge in the CEQA feedback as positive components of the placements. The students reported they were given greater flexibility and were allowed to be creative and self-directed. They also recognised that autonomy and independence was actively facilitated and encouraged. The practice educators described the students as being empowered and noted the positive aspects of creativity, independence and initiative that emerged as part of the student learning outcomes. The students were noted to own the management of the clinic from day one with attention to ‘housekeeping’, organisation, timetabling and management of resources. The physiotherapy students were noted to devise their own system to overcome the challenge of timetabling sessions for four students with only three treatment spaces. The practice educator noted a sense of *pride* and *ownership* among these students. These concepts of pride, ownership and initiative were also reported in other student-led clinics run by the University of Limerick clinical therapies programmes.

Relationships

This theme emerged in the CEQA forms for both students and practice educators. The practice educators referred to relationships being built with external agencies in which the placements were located. Both the students and the practice educators refer to the supervisory relationship in positive terms.

As noted above the students referred to the staff as '*open*' to questions and stated that they were provided with a '*supportive*' environment. Students expressed feeling part of a team with motivated staff in the placement sites. Practice educators reported they developed a good rapport with the students. Both students and practice educators were clear and explicit about expectations for the placement and allowed an open atmosphere for discussion and feedback. This permitted the student to always be challenged and stretch their capabilities without feeling overwhelmed. The nature of the relationship allowed the student to feel comfortable to look for support from the practice educator whenever it was needed. One physiotherapy student reported having an '*excellent relationship with the practice educator*' and was '*very comfortable when seeking help*'. In turn the practice educators felt secure that the students would seek out their support when required. This created an atmosphere of 'trust' and open communication within the supervision relationship in these placements.

Discussion

The review of the student-led clinics carried out within the University of Limerick outlined a number of concepts that also emerged within the available literature on this topic. In keeping with the findings of Black et al. (2013), the students in this study also demonstrated enhanced competencies in terms of clinical and administrative skills. The students demonstrated a clear understanding and appreciation of the need for a person-centred approach in their management of service users. A similar finding was also reported in a review of the literature on student-led clinics (Frakes et al., 2011). Some aspects of the placement which were reported by students as challenges, were also reported as benefits to their learning. The type of caseload and amount of background information available on service users was different to previous placements and posed a challenge for the

students in terms of the 'steep learning curve' they encountered to develop their knowledge and skills. Other challenges reported within this study, such as availability of space and resources, as well as time-commitments for practice educators, have also emerged as challenges within other reported student-led clinics (Howell et al., 2011).

An interesting outcome within this study was that many of the challenges led to initiatives and creativity within the placements. Students reported not having access to resources on site and having to plan and prepare sufficient resources to be flexible in therapy sessions and ready to step up and step down their therapy plan as needed. Physical space was an issue for some of the placement sites and this led the students to think creatively about their timetabling, use of space and resources, and thus demonstrate a greater ownership of the running of the clinic. These shortcomings (space/time/resources etc.) compelled the students to problem solve logistical issues that would not necessarily arise within a traditional placement model. This requirement for the students to think laterally, turned out to be an asset for the students as it facilitated student learning and professional development in a comprehensive way.

The findings of this study highlighted the importance of the supervisory relationship for student learning. This concept was noted by both the students and the practice educators. In a study by Rodger et al. (2014), OT students surveyed in Australia similarly identified the importance of the student-practice educator relationship as the basis for their learning on placement. In this study, both the students and the practice educators were positive about the relationship on placement.

An open atmosphere for discussion and feedback was reported within the findings of this study. In a qualitative case study on an exemplary practice educator, openness was noted by a student and co-worker of this educator, as a key factor in the success of the clinical experience (Kelly, 2007). This fits with the attributes of excellence in practice educators from the perspective of final year occupational therapy students (Roger et al., 2014).

The right mix of challenge and support enables the student to learn optimally on student placements. Getting the balance right for the individual student is important. Too little or too much autonomy could cause students to be uncomfortable or to feel overwhelmed (Rodger et al., 2014).

The atmosphere of 'trust' and open communication within the supervision relationship which was found in this study, fits in with

the findings of Rodger et al. (2014). They noted that in the presence of a supportive relationship, students were able to take risks and develop their skills as future therapists. In our study, the SLT students sometimes completed sessions independently on placement without direct supervision. They received indirect supervision in terms of practice educator support to review their plans for treatment sessions in advance. This was an important part of building a trusting relationship in which the students would feel responsible and able to liaise with their educator at any stage if needed. While some of our students noted the 'steep learning curve' in the student-led clinics, they also referred to having plenty of support from staff and supervisors, and increased confidence by the end of the placement.

The exemplary practice educator views each student as an adult learner, who brings prior experience to learning, is goal-directed, eager to learn, and is willing and able to self-assess and direct the learning experience (Kelly, 2007). In this study, practice educators reported students to have taken ownership and responsibility from day one. They also noted student's independence, creativity, motivation and initiative.

The feedback from students in this study reflected the pride they felt in the daily running of their clinics. In an investigation of student experiences of a student-led physiotherapy clinic in the United States of America (Black et al., 2013) the concept of pride emerged as an overarching and pervasive theme. This outcome is also reported in the study by Palombaro et al. (2011).

One possible explanation for the mostly positive outcomes reported for the placements as seen in this study could be that student-led clinics fit better into a more contemporary view of an educational partnership. This view realises educators as facilitators of learning, compared to the more traditional methods of practice education such as the apprenticeship model (Rodgers et al., 2014). Gray (2008) suggests that traditional methods of practice education may be inadequate to meet the needs of Generation Y students. These are described by Prensky (2001) as the generation born in the 1980s and 1990s who have developed a fluency in the use of digital technology which earlier generations could never emulate.

The practice educators in our study also referred to the building of relationships with external stakeholders as a positive outcome. This is also reflected in the literature in various student-led clinic models, where relationships were strengthened with local medical professionals (Palombaro et al., 2011), health professional peers (Sheu et al., 2011),

across the health science spectrum of the university (Moskowitz et al., 2006) and with uninsured and underserved members of the community (Palombaro et al., 2011, Moskowitz et al., 2006). These new relationships developed out of a challenge to find placements and thus provided new initiatives. In the same manner that our practice education team were innovative in establishing new links with external agencies, the students had to be resourceful and creative in responding to challenges they met on these placements. These challenges differed from those they may have encountered in more traditional settings.

As the university in this study has now aligned the timetable for teaching and practice education across the three discipline programmes, a significant barrier to inter-professional student-led clinics has been overcome – that is, timetabling (Frakes et al., 2011). The review of feedback from these uni-disciplinary experiences is already providing valuable information to be integrated into preparation and planning of inter-professional student-led clinics within the university going forward.

Conclusion

Setting up student-led clinics requires a large commitment of time and energy from students and university staff, both in the planning and in the implementation stages, and there are many factors to take into account in order to make it of benefit to all concerned.

In spite of the challenges, these clinics are being piloted in larger numbers around the globe and the feedback on student learning and practice educator experiences seem to indicate that there are also many benefits to this type of placement.

As placements become more difficult to source due to cutbacks in the healthcare sector, student-led clinics may be an innovative way of overcoming this dilemma. Although challenges arise in creation of such initiatives, much learning can be gained from overcoming these challenges.

Limitations

This small scale study is a qualitative review of feedback from the experiences of a small number of students and practice educators in a university in the Republic of Ireland. It is not possible to generalise these outcomes or infer significance to a wider population. However the findings present valuable information on these learning experiences and may be beneficial in terms of planning for larger scale research in the future.

References

- Black, J.D., Palombaro, K.H. and Dole, R.L. (2013) Student experiences in creating and launching a student-led physical therapy pro bono clinic: A qualitative investigation. *Physical Therapy*. 93, 5, 637-648
- Braun, V and Clarke. (2006) Using thematic analysis in Psychology. *Qualitative Research in Psychology*. 3, 77-101
- Butala NM., Chang, H., Horwitz, LI., Bartlett, M. and Ellis, P. (2013) Improving quality of preventive care at a student-run free clinic. *PLoS ONE*. 8, 11:e81441
- Frakes, K.A., Tyzack, Z., Miller, M., Davies, L., Swanston, A. and Brownie, S. (2011) *The Capricornia Project: Developing and implementing an Interprofessional student-assisted allied health clinic*. Brisbane, QLD: Clinical Education and Training (ClinEdQ) Queensland Health
- Gray, P. (2008). Placement educators: Are you ready for the net-ready generation? *British Journal of Occupational Therapy*, 71, 5, 175
- Howell, D.M., Wittman, P. and Bundy, M.B. (2012) Interprofessional clinical education for occupational therapy and psychology students: A social skills training program for children with autism spectrum disorders. *Journal of Interprofessional Care*. 26, 49-55
- Health Service Executive (2011) *Report on the Review of the Practice Education System*. Dublin: Health Service Executive
- Hughes, C. Alford, J. Campbell, L., Rule, M. Armstrong, C. Such, C. and Ward, R. (2002). Caring for the chronically ill; A clinic for final-year medical students. *Medical Teaching*. 24, 5, 564-566
- Kelly S. (2007) The exemplary clinical instructor: A qualitative case study. *Journal of Physical Therapy Education*. 21, 1, 63-69
- Ladyshewsky R.K., Barrie S.C. (1996) An audit tool to measure the costs, benefits, and teaching and learning practices of a clinical education program. *Bulletin of*

- the Australian-New Zealand Association of Medical Education*. 23, 3, 14-21
- Moskowitz, D., Glasco, J., Johnson, B., and Wang, G. (2006) Students in the community: An interprofessional student-run free clinic. *Journal of Interprofessional Care*. 20, 3, 254-259
- Newell R, Burnard P. (2006) *Vital Notes for Nurses: Research for evidence based practice*. Oxford: Blackwell
- Palombaro K.M., Dole, R.L., Black Lattanzi, J. (2011) A case report of a student-led pro-bono clinic: A proposed model for meeting student and community needs in a sustainable manner. *Physical Therapy*. 91, 11, 1627-1635
- Prensky M. (2001) Digital natives, digital immigrants: Part 1. *On the Horizon*, 9, 5, 1-6
- Reeves. S., Freeth, D., McCrorie, P. and Perry, D. (2002) 'It teaches you what to expect in future ...': Interprofessional learning on a training ward for medical nursing, occupational therapy and physiotherapy student. *Medical Education*. 36, 337-344
- Rodger, S., Thomas, Y., Greber, C., BroadBridge, J., Edwards, A., Newton, J. and Lyons, M. (2014) Attributes of excellence in practice educators: The perspectives of Australian occupational therapy students. *Australian Occupational Therapy Journal*, 61, 159-167
- Simpson, S.A., and Long, J.A. (2007) Medical student-run health clinics: Important contributors to patient care and medical education. *Journal of General Internal Medicine*. 22, 352-356
- Sheu, L. C., Zheng, P., Coelho, A. D., Lin, L. D., O'Sullivan P. S., O'Brien, B. C., Yu, A. Y., Lai, C. J. (2011) Learning through service: Student perceptions on volunteering at interprofessional hepatitis B student-run clinics. *J. Canc Educ*. 26: 228-233
- World Health Organisation (2010) *Framework for Action on Interprofessional Education and Collaborative Practice*. [online] available at: http://whqlibdoc.who.int/hq/2010/WHO_HRH_HP_N_10.3_eng.pdf?ua=1. [accessed on 1 October 2015]