Squaring the open circle: resolving the iron triangle and the interaction equivalence theorem

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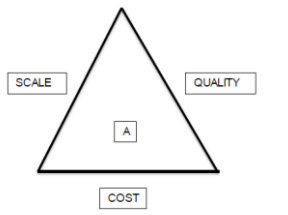
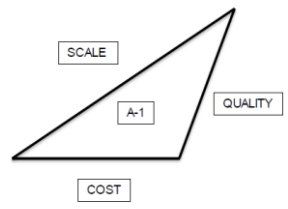




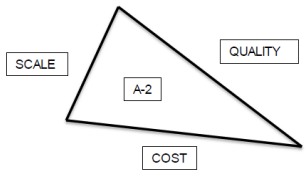
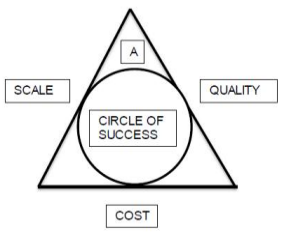
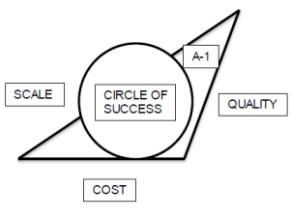


Figure 1 The Iron Triangle of Education





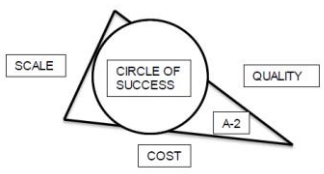
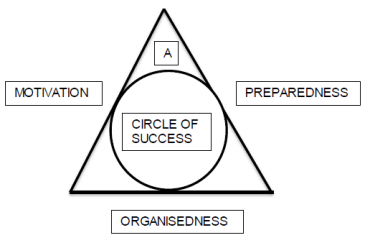
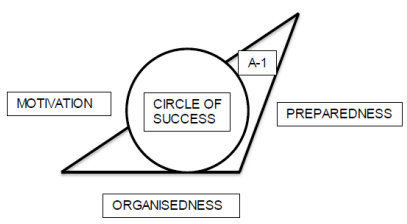


Figure 3 The Iron Triangle and Circle of Success of Education from an Institutional perspective





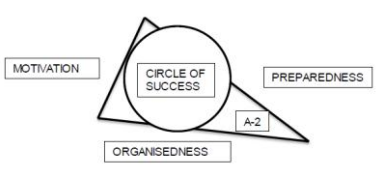


Figure 4 The Iron Triangle and Circle of Success of Education from a Student's perspective

Introduction

A number of visual models have been proposed to help explain the interplay and interactions between specified components of higher education (HE). As with many visual models they can reinforce or help explain an argument or conceptual logic, but can equally conceal as much as they reveal unless tested out.

The iron triangle model

At institutional level the notion of an iron triangle for higher education has been posited, linking *access*, *quality* and *cost* in order to suggest means of using open, distance and e-learning (ODeL) and/or OER for widening access to higher education for the same or lower cost without compromising outcomes (Daniel and Uvalic-Trumbic, 2011). Figure 1 shows the basic triangle with equal length sides representing the three factors. The assumption is that increases in one point of the triangle will inevitably lead to stresses in the other points. Pack more students into the class and quality will be perceived to suffer (Figure 1- A1). Equally, try to improve quality by providing more learning materials or better teachers and the overall cost will go up (Figure 1- A2).

The interaction equivalence theorem model

At the level of teaching and learning within a course an interaction equivalence theorem or EQuiv (Figure 2) was developed to explain the relative contributions to successful study of teachers, students and educational content in formal settings (Miyazoe and Anderson, 2010), and recently informal settings using OER and MOOCs, with passing mention of links to the original iron triangle model (Miyazoe and Anderson, 2013). The basic premise of the full EQuiv (Figure 2A) is that:

'… deep and meaningful learning is supported as long as one of the three forms of interaction (student-teacher; student- student; student-content) is at a high level. The other two may be offered at minimal levels, or even eliminated, without degrading the student experience'. (p2).

Supply side versus demand side

Both these models deal mainly with the supply side of the educational systems they attempt to represent, namely impacts of the *availability and accessibility* to more people of the interaction elements in the models, and largely ignore the demand side in terms of the *affordability and acceptability* of the available and accessible provision to students and learners alike within their own contexts.

Adding a circle of success to the iron triangle

A defining feature of many HE systems has been one of selecting students based on prior educational achievements, thus ensuring that they are more likely to be well prepared and confident in the learning abilities. To indicate another measure of success from a student perspective I have added a 'circle of success' to the iron triangle (Figure 3-A) to represent students who complete their chosen studies. In this case any changes in the triangle as noted before (e.g. increased cost; a drop in quality; fewer students) will inevitably breech this circle of success (Figure 3-A1 & 2), thus representing a lowering of the numbers who successfully complete.

A student centred iron triangle

In addition I modified the factors on the iron triangle to also reflect the perspective of the prospective learner or student in respect to their *organisational capacity* to invest the time required to study, the levels of confidence and/or *preparedness* that they hold and their *motivations* for undertaking those studies. This new triangle captures and adds in key aspects of the learners' or students' own context and prior experiences (Figure 4-A). As in Figure 3 I have also added a circle of success to showt that a student's chances of completing their chosen studies will be compromised if, for example, they are low in preparedness (figure 4-A1) or cannot devote sufficient time to their studies (Figure 4-A2)

A student centred Interaction Engagement Equivalence Theorem

To accommodate the 'demand 'side of the HE 'equation' I propose another model, an interaction engagement equivalence theorem (Figure 5). This replaces the simple notion of a student in the EQuiv with the new student centred iron triangle introduced above, changing the assumption of just a student to one of student engagement with the interactions on offer to them. It also aligns the two different sets of equivalences within the same conceptual framework.

Discussion

There is debate as to whether and how OER and/or MOOCs will provide cheaper and more scalable solutions to increasing participation rates in HE compared to the current face to face or ODeL models. However, neither the iron triangle nor the EQuiv model adequately reflects the influence that learners' personal attributes and circumstances have on the phenomena that they are trying to account for. The modified visual models presented here provide a new framework with which to examine the capacity of open education systems at the institutional and individual learner level to be expanded effectively and equitably.

References

Daniel, J. and Uvalic-Trumbic, S. (2011) *The impact of new business models for higher education on student financing*, Financing Higher Education in Developing Countries Think Tank, Bellagio Conference Centre, Las Vegas, 8-12 August, 2011

Miyazoe, D. and Anderson, T. (2010) The Interaction Equivalency Theorem, *Journal of Interactive Online Learning*, (2), 94-104.

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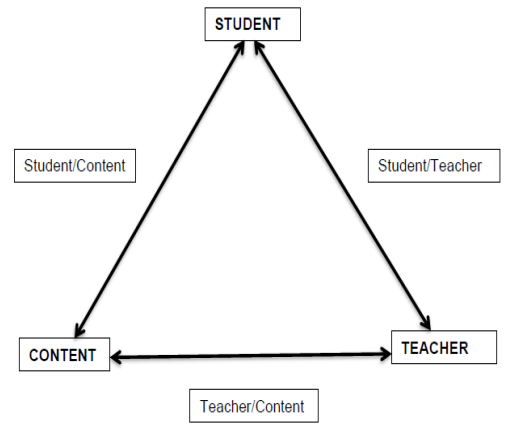

Figure 2A The basic Interaction Equivalence Theorem

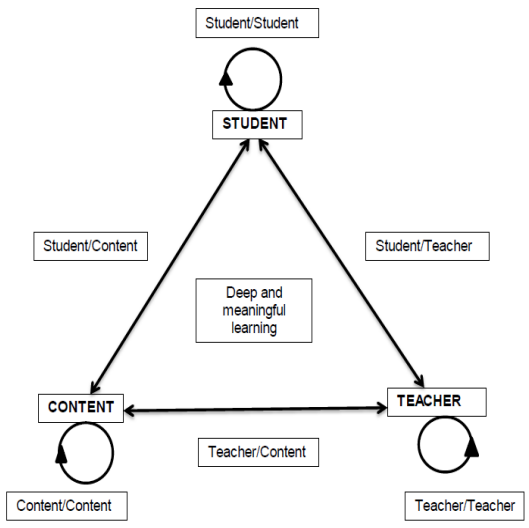

Figure 2 The full Interaction Equivalence Theorem

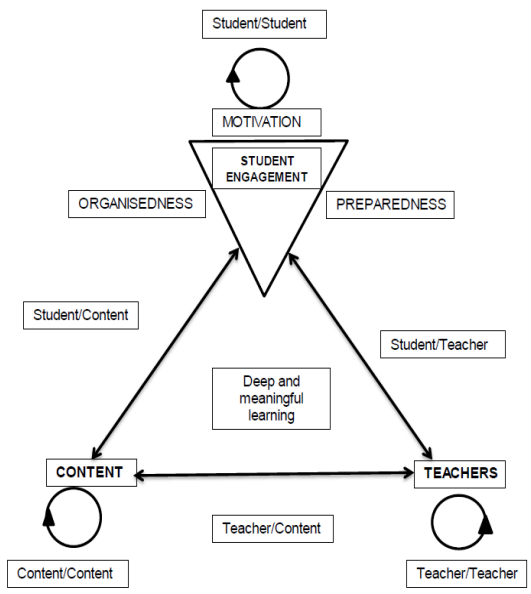

Figure 5 The Interaction Engagement Equivalence Theorem