Role Playing African Development: an International Comparison

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The African Development Game is a role playing simulation developed to demonstrate the difficulties six African countries face in reaching the Millennium Development Goals. The game has been played in three different countries, South Africa, Sweden and Finland, to examine its utility as a learning tool for students who are unfamiliar both with the Millennium Development Goals and the problems of African development. Analysis of the games played in South Africa and Sweden. is based on a comparison of student reflections supplemented by participant observation and spreadsheet information of economic performances. Marked differences in the types of learning and success in repaying debt were observed between the two groups of students. They all commented, however, on the effectiveness of the role play as a learning tool.

Simulation Games and the Curriculum at Rhodes University

The Geography curriculum at Rhodes University is designed to develop a knowledge-based understanding and an ethical awareness of the critical problems facing Africa's development. In order for the attitudinal, or affective, learning to take place alongside knowledge-based, or cognitive, learning a sequence of role playing and on-line simulations have been embedded within the curriculum. Our own experience of playing these games is in accordance with Sociologist Richard Dukes's (1997) summary of the benefits of using simulations and games.

1. They increase motivation and promote individual learning based on the learner's own viewpoint.

2. They can achieve both cognitive and affective learning outcomes.

3. They promote interpersonal activities, discussions and relationships.

4. Lastly, they can help learners develop a more holistic view both of the world and the constructs which we use to interpret it.

Later we will see these types of learning reported by the students who have played the African Development Game (ADG) both in South Africa and further afield.

The simulations and role playing games increase in complexity and duration as the learners progress through the Geography curriculum. The relatively simple simulations can be played in an afternoon and some of them, such as the ADG, were developed to introduce students to role play and gaming as a learning technique. This was partly to enable them to participate more readily and interact more speedily in the complex games played when they become senior students. The World Trade Game (Sloman 2002, World Council of Churches 2006), African Development Game and Swampfire are all role plays experienced by our First Year students. The computer simulation, 3rd World Farmer Game (3rd World Farmer Team 2006), is played by our Second Year students over a

slightly longer period. Here the simulation is on-line and students report and reflect on their experience using a web-based learning platform.

Role playing games of considerably greater complexity are played by the Third Year and Postgraduate students. The African Catchment Game, which was developed from Graham Chapman's Exaction (Chapman 1989, 1992) and Southland, which was produced by the United Nations Food and Agriculture Organization (Food and Agriculture Organization 2003), are both played over periods from one to several days. Riskmap (Moseley 2001, Moseley and Logan 2001) is a computer simulation played over similar time periods by senior students.

Some of these simulations have already been discussed within the context of assessment practice (Fox and Rowntree 2004), the effectiveness of active learning methods in promoting deep learning (Rowntree and Fox 2006), and their contribution to developing an alternative curriculum (Fox 2005). One feature of many of the games is that they have been adapted and extensively developed from existing simulations to suit the needs of our curriculum. This is one of the themes which this paper addresses. How was the World Trade Game modified so that it became the African Development Game? Which new simulator and game rules were introduced and how effective were they when played by different groups of students?

From World Trade Game to African Development Game
The World Trade Game was initially developed in the 1990s by Action Aid (World Council of Churches 2006) the global anti-poverty development organization. Its strength is its simplicity. Groups of players represent two rich, two middle-income and two poor countries. They manufacture shapes from paper, trade the shapes for money through a commodity trader and may also trade amongst themselves in raw materials (paper), technology (scissors, ruler etc), skills and labour. The game usually shows that the world trading system enables the gap between rich and poor to remain intact. Debriefing the participants can allow many economic, political and geographical concepts to be discussed, for example, the formation of trading organizations and cartels (Sloman 2002).

The African Development Game was developed over a two year period from initial experimentation with the World Trade Game in March and May 2005. Initially the World Trade Game was played with a view to seeing how effective it could be in meeting the curriculum and learning goals mentioned above. In South Africa it was played with Third Year students who were already experienced in simulations. In Sweden it was played with Second Year students. Participant observation and game debriefing sessions produced the feedback and led to the World Trade Game being modified. The African Development Game was then produced and played with its new rules and parameters with First Year students at Rhodes University in August 2005. This also led to certain minor aspects being modified. The current version of the game was then played again in South Africa with a second group of First Years in 2005 and then in Finland and Sweden in June and September 2006.

The new rules and parameters were as follows. Firstly, domestic resources were represented as coloured paper to enable participants to meet the MDGs through making houses, food, transport etc. These complemented the export resources which were now represented (realistically) as oil, gold and textiles and used for international trade. Each of the six countries had resources to enable it to trade on the world market and meet its MDGs:

1. Raw materials for export (oil, gold and textiles) were modeled as paper printed with appropriate icons.

2. Domestic raw materials for meeting the MDGs were modeled as coloured paper.

3. Technology was modeled as scissors, rulers, pencils, set squares etc.

4. Financial capital was modeled as money to enable debt with the World Bank to be repaid.

5. Human resources were modeled by participants' activities.

Six African countries were selected with sharply different geographical, resource and infrastructural potential. These replaced the USA, Japan, India, Brazil, Mozambique and Tanzania which were played in the World Trade Game.

1. Libya and Mauritius were chosen to represent export-based economies with relatively small populations and high Human Development Indices. They had limited domestic resources to meet the Millennium Development Goals.

2. South Africa and Ghana were selected since they are also exporters but with relatively large populations and lower Human Development Indices. They had more domestic resources available to enable them to meet the Millennium Development Goals.

3. Lesotho and Mali were representatives of countries with very limited exports, they have relatively smaller populations with very low Human Development Indices. They are both land-locked countries with limited domestic resources to meet the Millennium Development Goals.

Table 1 shows the real world data for 2004 which the simulation is modeling through provision of different quantities of paper, levels of debt repayment and provision of technological tools. These data are also given to the students to facilitate their cognitive learning.

Table 1: Country Statistics 2005

	External Debt (US$bn)	GDP/capita (purchasing power parity)	Population (millions)	Human Development Index	Exports
GHANA	7.4	2,300	21	0.568	Gold, cocoa
LESOTHO	0.7	3,200	1.9	0.493	Clothing, footwear
LIBYA	4.1	6,700	5.7	0.794	Oil, gas
MALI	3.3	900	12.3	0.326	Cotton, gold
MAURITIUS	1.8	12,800	1.2	0.785	Textiles, sugar
SOUTH AFRICA	27.0	11,100	44.3	0.666	Gold, diamonds

Sources: Central Intelligence Agency (2005) The World Factbook, [On-line], Available: http://www.cia.gov/cia/publications/factbook/ [15/06/05]

United Nations Development Programme (2005) Human Development Report, [On-line], Available: http://hdr.undp.org/reports/global/2004/ [15/06/05]

The MDGs were simplified from eight (Swanson 2005) and translated into five activities to provide basic needs for the country's population in five areas. These were selected as activities that could be easily undertaken in role play. They are particularly addressing MDGs one and two - to eradicate extreme hunger and poverty, and to achieve universal primary education. The game instructions for the players read as follows.

1. Housing. Make a house: it must be made from at least TWO colours, it must be at least 10 cms high and be 3D (three dimensional).

2. Education. Make a book: it must contain text with each page at least 10 cm x 10 cm. FOUR pages is the minimum size for the book.

3. Transport. Make a form of transport: it must be made from at least TWO colours, be a minimum of 15 cms long and 3D.

4. Food. Make examples of THREE kinds of food in THREE colours: be sure that they are in appropriate colours and 3D. 5 cms long is the minimum length for each kind of food.

5. Clothing. Make one article of clothing from at least THREE colours which the people of your nation often wear. 15 cms is the minimum length.

The size, colour and other requirements were initially simpler but observation from the first ADG runs in 2005 showed that they could be considerably harder. To meet the goals well then a country would need to trade and co-operate with its neighbours. Final judging of how well the country had done was by a small panel (the facilitators) of UN Experts.

The game process followed by the World Trade Game was kept intact even though the ADG is more complex. The total duration is approximately two hours. The process starts with a short briefing of 5-10 minutes and then five or six 'years' of game play, each year lasting approximately 15 minutes. The UN Expert Group evaluation of the houses, food etc., produced takes 10-15 minutes and this is followed by a group debriefing of approximately 15 minutes. Lastly The students were asked to complete a short free-writing exercise for approximately five minutes: 'about your experience of the African Development Game. What were your impressions, what have you learned?". The reflection exercise and material from the debriefing provide the basis for some of the evaluation presented later. Participant observation was assisted by keeping a journal, taking photographs and making an iStopMotion movie. The images and movie were very valuable in helping remember each game.

Two Contexts

The South African First Year Geography students played the ADG in two groups on 12th and 15th August 2005. This was the week after they had played the World Trade Game and some three weeks into their course. The ADG was played to complement the theory course 'Introduction to Global Development' and the game was designed, in part, to develop their cognitive understanding. So real information about the six African countries (Table 1) was given in the game briefing. The intentions of the simulation specify:

- To introduce you to the resource potential of selected African countries;

- To build your awareness of the Millennium Development Goals;

- To demonstrate how difficult it is for indebted African countries to meet their Millennium Development Goals given the nature of the world trading system and their lack of resources;

The Swedish First Year students were enrolled at Högskolan Väst in the International Programme in Politics and Economics. The African Development Game was played at the very beginning of the course in September 2006 to introduce them to typical development issues which graduates from the programme would be expected to understand. The timing of the the game within their curriculum is therefore broadly similar and so were the affective intentions of playing the game. They had not, however, played the World Trade Game the week before and there was less emphasis on real world characteristics in the countries they were representing, although the materials given were identical.

My own notes concerning student composition also revealed some key differences:

In Sweden I estimated the profile of the group as follows: average age late teens to early 20s, 45 percent of the students either first or second generation immigrants from former Yugoslavia (based on their names) with the rest Swedish from western Sweden. Majority of the class were female, only eight males in 42 students.

In South Africa the students were younger with the majority aged 18 and very few in their early twenties. 72 students were divided into two groups for the role play, and once again the majority of the class, approximately 55 percent, were female. A significant minority, 25 percent, of the students were from Zimbabwe and other African countries. Only 15 percent of the class were black Africans.

Evaluation of Student Reflections
Length of Reflections
The first way in which we can assess the responses which the two groups made is to simply compare the length of their reflections since there were immediate differences in the amount they wrote. Figure 1 shows that the modal class for South African students was only one sentence, for Swedish students it was two sentences and a significant proportion wrote up to six sentences. Clearly the students playing in Sweden spent more time and care reflecting on what had happened in the game.

My interpretation of this relates to the motivation of the students and timing of the simulations. In South Africa they were played on Friday and Monday afternoons and many of the students were anxious to leave. Furthermore, only approximately one-third of the Rhodes students would be intending to major in the subject so their motivation for doing the course is not necessarily going to be high. In contrast, the IPPE students in Sweden were more highly motivated, they have specifically applied for an oversubscribed course and been selected on merit. Also the pressure to leave for extra-mural activities was much less in Sweden since the games were played in the morning.

The two sets of student reflections can also be assessed in terms of what they said. Bloom's revised taxonomy (Forehand 2005) is used to examine the extent of their affective and cognitive understanding. In the affective domain the students revealed whether they had responded, valued or organized their knowledge. In the cognitive domain the reflections were read to see whether the students had remembered, understood, applied, analyzed or evaluated knowledge. In both taxonomies

the simplest forms of behaviour are first and the categories then become more complex. There are further categories in both taxonomies but the reflections did not present evidence of them.
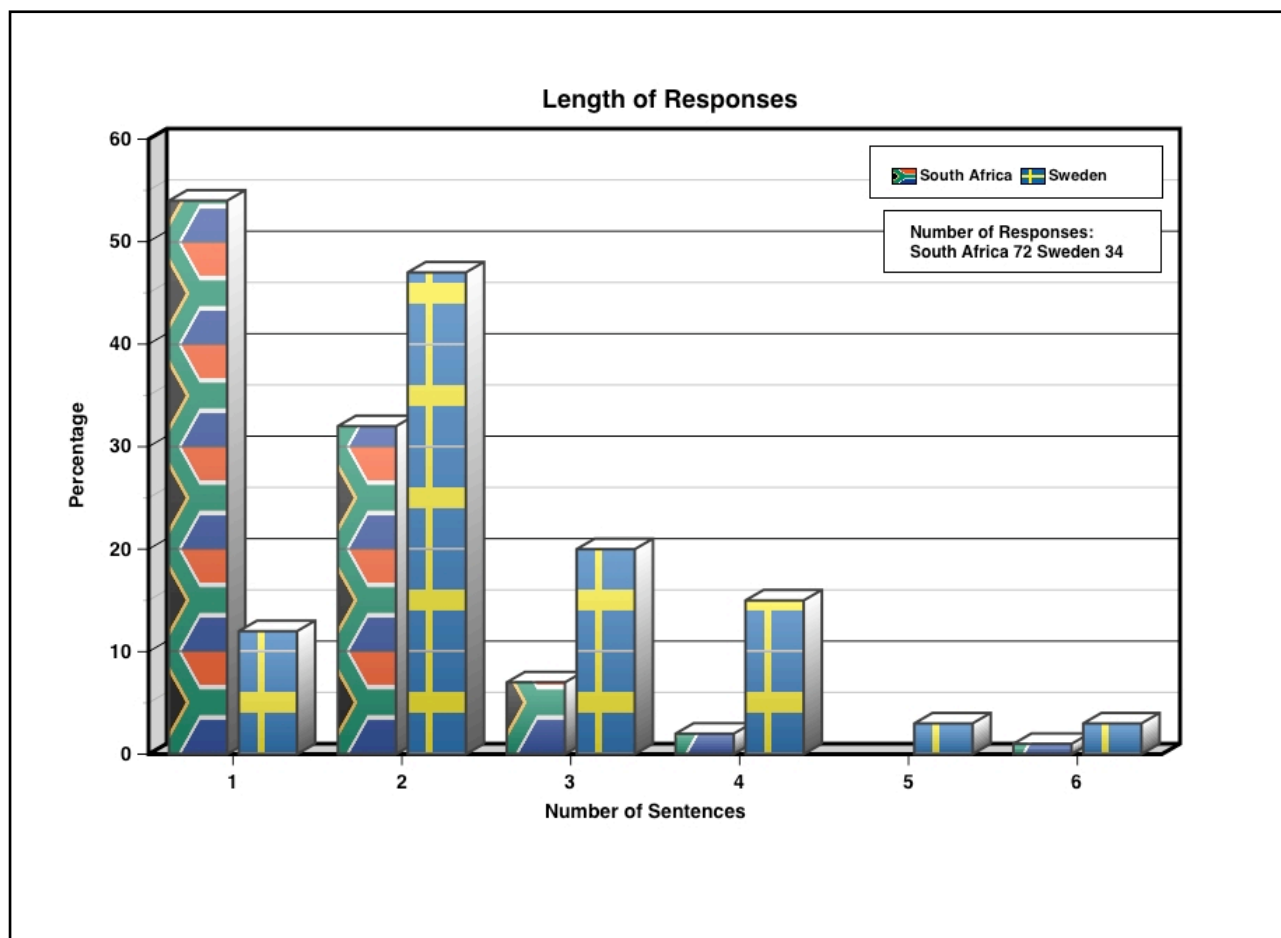
Figure 1: Length of Reflections, South Africa and Sweden
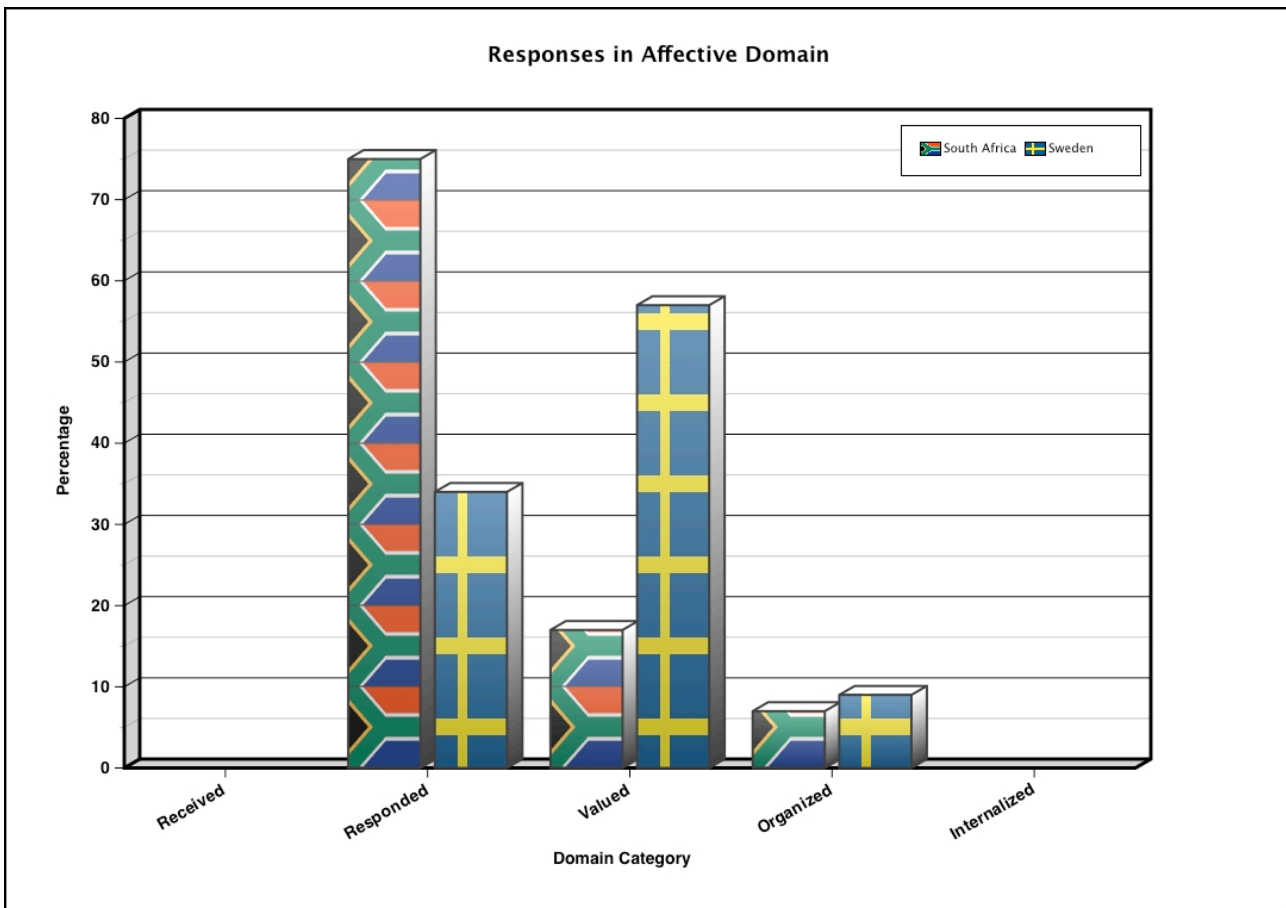
Affective Responses

Figure 2 shows responses in the three categories of the affective domain which the students exhibited. It is clear that the South African students dominated in the responded category. In other words they had actively participated and reacted positively in some way to the role play. The following quote shows that South Africa student 52's role play had led to the following conclusion.

"SA [South Africa] has a lot of debt and the game illustrated just how hard it is to get rid of the debt.".

Some of the responses in this category also indicated an appreciation of the type of learning activity itself. South Africa student 47's comment shows that learning can take place in an active rather than a passive situation.

"You can learn more in an uncontrolled active process/situation where you get involved rather than one where you sit back and listen."

Although we are not considering the role play that took place in Finland in any detail here it is interesting to note that a number of the players commented that were unprepared to participate, at least initially, in the role play. They reported that their learning background was usually far more passive.

Figure 2: Reflections by Affective Domain

Fewer of the students in the South African case study had comments that could be classed in the valuing category. The 12 responses showed values, attitudes or beliefs in relation to the role play. A good example is South Africa student 46's reflection.

"How difficult it must be to run a poor country with little resources and the extent to which the little resources owned must be maximized. I wouldn't really like to think about how greater the challenge must be in the real life situation for these countries."

In the organizing category come the longer reflections which showed students who were arranging, comparing, integrating and trying to generalize as a consequence of the role plays. South Africa student 60 generalized as follows:

"[It is] virtually impossible to eliminate any African disadvantage in the world economy unless there is a complete reversal in world economic banking systems. This is unlikely to occur."

Lastly comes one of the longest reflections from the South African role play. Student 69 shows us quite clearly how effective both of the games had been as learning experiences.

"I've learnt that it's easier to be the World Bank than a peripheral country. I enjoyed both games, but thought the World Bank treated us rather unfairly in the second one. I guess that shows how much poor countries are at the mercy of the WB. The games showed how difficult it is for the peripheral countries to get themselves out of the hole they have landed in."

The students in Sweden had fewer responses in the responded category but a number of them had clearly reacted to the experience of role play. One of the 12 reflections in this category equated the role play with 'real life'.

"The problems that look easy to solve on 'the paper', theoretically, can be very difficult in the real life. There were many more things that became issues, while playing the game, than we thought in the beginning."

The majority of the responses by the Swedish students indicated that the role play had impacted on their feelings, attitudes or values. Often they commented on the unfairness of the trading system and the difficulties in achieving goals. Student 17, for example reached this conclusion and also, like the students in South Africa, commented on the enjoyment in being engaged in game play.

"I found it very interesting doing this! You get to see for real how difficult it actually is with for example resources. The goals are indeed very hard to achieve and depending on your countries resources, it's not equal for everyone. Thank you!"

Student 10 also reflected on her own behaviour in the role play.

"It is really hard to reach the MDGs, because of the unfair distribution of resources. You tend to be very egoistic when it is a matter of competition. I've learned that you have to trade with your neighbours!!"

Only three students gave responses that could be categorized as organizing. These were perceptive reflections, however, and indicate the power of engaging in role plays. Student 7 shows us that the role play had brought to the foreground different points of view and also the role of greed.

"I've learned to see the problems in developing countries from another point of view. There are substantial problems in the distribution of resources in the world which leads to conflict, I've also seen how 'greed' affects people (countries, nations, government) to act in a certain way."

Cognitive Responses

Figure 3 reveals similar patterns in the cognitive domain. Once more the South African role players dominated in the lower level categories: indicating that they had remembered or understood as a result of the role play. The Swedish role play, in contrast, had responses in the applied, analyzed, evaluated categories.

The following is a typical response from the remembering category. Many other students, for example South Africa student 18, also showed that they could now recall the debt level of countries, their location etc.

" I know the highly indebted countries in Africa. The aims and objectives of MDGs for the African countries which we looked at today. .The debts of each country and how they try to pay off debt. "

Most of the responses from the Sweden role plays were in the applied and analyzed categories. Sweden student 24 gives a succinct example of analyzing.

"We should have paid off more of the debt in the beginning of the game. The game really shows how hard it is to achieve all the goals and at the same time pay off the debt. We should also have traded more with the other countries. It was fun and interesting to play the game."

The fewest responses came from the evaluation category. South African student 72 shows, however, that a high level of understanding is quite feasible. Notably through relating the two games to each other.

"I gained valuable insight into how trade and debt payment and development work. In the World Trade Game I was Tanzania. It was very difficult to come across affordable resources and to sell the resources without being heavily exploited. In the African Development Game I was South Africa, rich in resources and huge debt. While it was easier to come across resources and gold for money the debt was so large that it was still difficult to pay it off. These games took a long time but definitely make the process clearer and provided me with a better understanding of how they worked in real life scale."
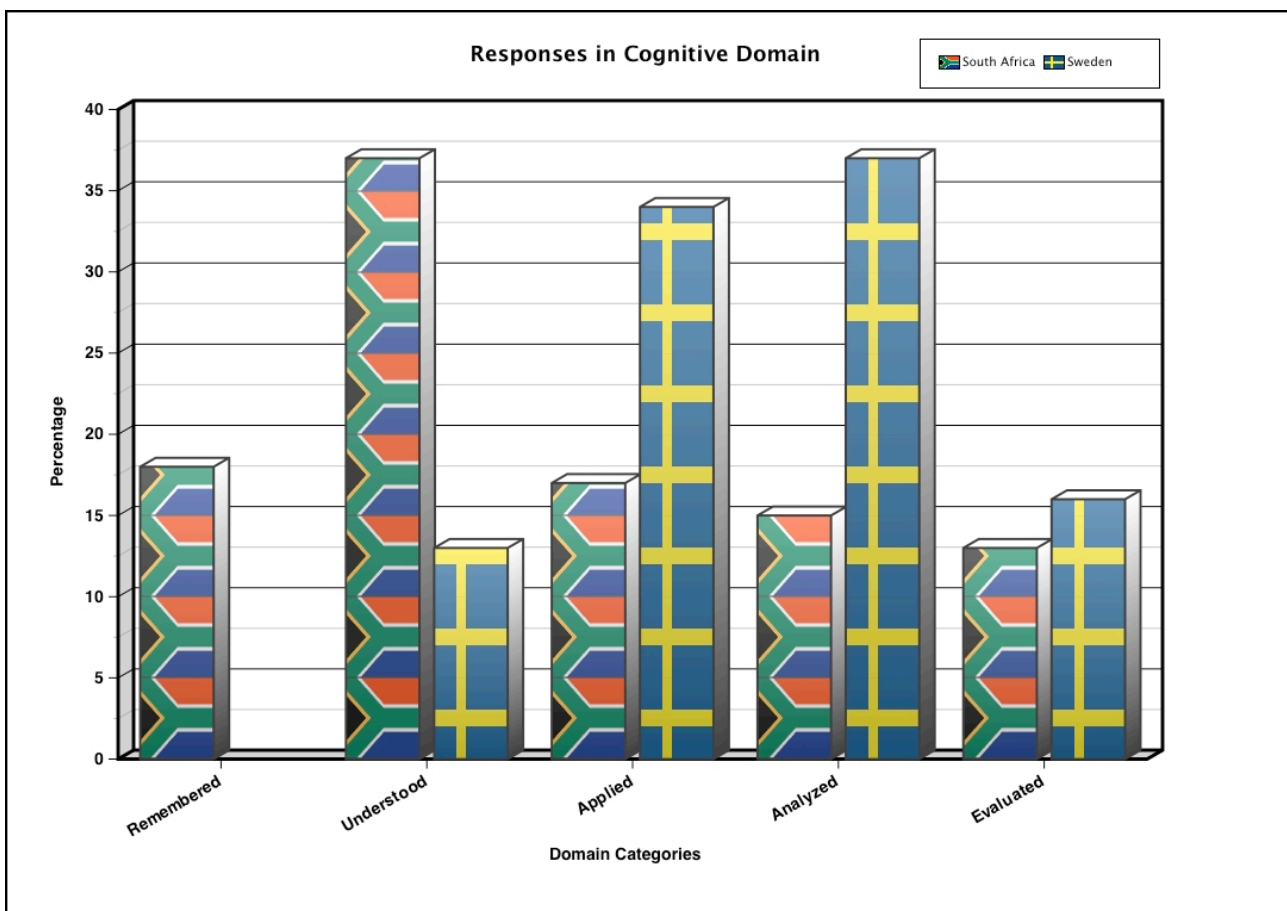
Figure 3: Reflections by Cognitive Domain

Synthesis and an ability to see the need for organizational structures is also noticeable in these reflections from Sweden student 2.

"I have learned that problems with debts and resources takes time to solve. The World Bank was very slow, probably the same as in real life. The trade with other countries is really important, because one country often doesn't have all the resources that is needed to build everything. It is also important to have a plan for everything and split up the jobs between the members of the country."

Spreadsheets and Participant Observation
If we examine the spreadsheet information compiled from the World Bank's trade and debt records we find a different scenario. The learners who played the game in South Africa did well at getting

out of debt through the course of the game. Just under half, two out of six and three out of six, countries got out of debt in the two games played. In Sweden the learners were much slower at getting the game started and their interactions were also more infrequent. Consequently in one game no countries got out of debt and in the other only one country got out of debt.

For an explanation we need to consider the 'imported' rules which were being brought into the games in Sweden. Crookall *et al* (1987) distinguished between three sources of rules found in simulations: simulator rules, game rules and imported rules Simulator rules are representations of real-world rules, game rules are non-representative or procedural in nature (make a house etc.), whereas imported rules come from the role-players themselves since they are rule-using people from a particular cultural context.

Some of the reflections revealed that the players in Sweden were uncomfortable in a game situation when confronted with a number of unknown and ill-defined complexities. They were more used to very complete and clear instructions before attempting tasks. In this type of role play these sorts of instructions are not all given and so they were being required to act, react and strategize in unfamiliar ways. Their imported rules, therefore, were hampering their ability to play the game.

Conclusion

The African Catchment Game appears to have successfully met the cognitive and affective outcomes specified for the Geography curriculum at Rhodes University. In the cognitive sense the students said that they could recall and understand salient features of African countries and how the world trading system and debt impact on the development prospects of different African countries. They had also developed an appreciation of the Millennium Development Goals. More than one Rhodes student commented that they hadn't even heard of the Millennium Development Goals before playing the simulation. There were fewer responses for the higher level cognitive skills of analysis and evaluation, however, the reflections that these students produced indicated that the role play had benefitted their learning. Additionally, the reflections show that students had become interested and appreciated learning through playing simulations.

When played in a similar context in Sweden the reflection exercises had greater proportions of responses in higher level cognitive and affective domains. The length of the responses was also somewhat longer. These differences in the responses between the two groups of students can, at least in part, be related to their different levels of motivation and the times at which the simulations were played.

Finally, it appears as though the African Development Game is a suitable reflection of African reality since the most successful players of the game so far have been Africans. The players' imported rules seem to match the procedural and game rules which the African Development Game was set up to model.

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