

# Assessing maturity of institutional policies for underpinning academic integrity

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## **Assessing maturity of institutional policies for underpinning academic integrity**

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### **Abstract**

Most higher education institutions would claim to have policies for handling academic misconduct and plagiarism. However there are important questions to explore for every institution about how consistently and fairly the policies have been implemented and whether they are effective at discouraging, detecting and penalising cases of plagiarism. It is suggested that it would be useful to have access to tools for evaluating and comparing good practice for institutional policies.

The Academic Integrity Maturity Model (AIMM) was developed for comparing the national results from 27 EU countries from the EU funded project (2010-2013) Impact of Policies for Plagiarism in Higher Education Across Europe (IPPHEAE). The assessment of “maturity” of policies at national level was based on data captured from various elements of an EU-wide survey of institutions and national agencies using nine criteria: research, training, level of knowledge, communications, prevention strategies, use of software tools, consistency of sanctions and of policies and transparency of processes.

This paper demonstrates how AIMM can be adapted for institutional use by applying the criteria to some anonymous institutional datasets from EU Higher Education institutions extracted from the IPPHEAE survey results. The AIMM tool is presented as a candidate for auditing institutional academic integrity processes. Evidence from the application of the tool at national and institutional level is presented and evaluated.

Feedback will be welcomed from conference participants on how to fine-tune the metrics and assessment criteria before developing on-line assessment mechanisms for more general use, both by HE institutions and at national level.

**Keywords:** Plagiarism Policies, Academic Integrity, IPPHEAE project, Higher Educational Institutional assessment tools

### **Background**

The three-year project Impact of Policies for Plagiarism in Higher Education across Europe (IPPHEAE) completed in the autumn of 2013 was conducted by a consortium of five university partners from different parts of the European Union (EU), which was led by the author. IPPHEAE, funded under the EU's Lifelong Learning Programme, investigated the policies implemented in 27 EU member countries for managing plagiarism and academic misconduct at bachelor and master's degree levels (IPPHEAE website, Glendinning 2014, Foltynnek and Glendinning 2014).

The Academic Integrity Maturity Model (AIMM) was devised by the author as a means of comparing and summarising national results from the research for the EU countries studied. It was surmised that the tool could be usefully adapted and tuned for evaluating policies within higher education institutions. Further, if made accessible on-line, the tool could provide a way to encourage institutions to conduct self-assessment and use the resulting information to improve their responses to student plagiarism and cheating.

This paper shows how the tool was applied to data selected from the IPPHEAE surveys to provide profiles of policies for different (anonymous) EU institutions. The resulting profiles and the AIMM metrics are then interpreted and analysed to assess how they could support institutional development.

### Literature review

It emerged from analysis of IPPHEAE responses that differences between EU countries in their response to plagiarism and academic misconduct were generally not based just on the existence of strategies, policies or systems but on how effective and mature the processes were for developing, implementing, applying, monitoring and adapting them. This finding suggested that it would be useful to develop a model and tools for assessing the maturity of policies and systems for academic integrity in the spirit of the Capability Maturity Model Infrastructure (CMMI).

CMMI was developed by Carnegie Mellon’s Software Engineering Institute in the late 1980s, initially to evaluate and improve “performance management” in software engineering (CMMI Institute). Since then CMMI models have been developed for other sectors including CMMI for Services and CMMI for Acquisition. A huge industry of products, publications and services has built up around the CMMI brand, which has become an internationally adopted and respected commercial product for driving up quality and standards.

Capability Level	Focus	Key Process Areas
5 – Optimising	Continuous improvement	Process and technology change management; Defect Prevention; Causal Analysis, Resolution
4 – Quantitatively Managed	Product & process quality	Quality Management; Quantitative Process Management
3 – Defined	Pro-active engineering process management	Organisation process focus; peer review; training; product engineering
2 – Managed	Project management focus but largely reactive	Requirements Management; Project Planning, tracking; QA;
1 – Initial	Little control, poor planning	No Key Process Areas

**Figure 1: Capability Maturity Model Integration, Capability Levels (adapted from CMMI model)**

Fundamentally CMMI models encourage companies to adopt “mature” processes through a culture of continuous improvement. The CMMI appraisal process normally determines the “maturity level” of an organisation or unit, with a score from five maturity levels as depicted in Figure 1. Although CMMI provided the inspiration for AIMM, the model is not directly applicable to Academic Integrity policies and systems. Crucially, in the development of AIMM “the author was keen to provide a

simple, usable and accessible tool and to avoid the bureaucratic and commercial hinterland that has developed around CMMI” (Glendinning 2013 p41).

In the quest to develop metrics and criteria for AIMM the author drew on a wide range of publications and research into policies for upholding academic integrity (Carroll and Appleton 2001, Carroll 2005, East 2009, Macdonald and Carroll 2006, Moore 2008, Morris and Carroll 2011, Neville 2007, Park 2004, Pecorari and Shaw 2012, Rowell 2009, Tennant and Duggan 2008, Tennant and Duggan 2010).

The publication Policy Works (Morris and Carroll 2011) provided particularly good insights through a series of case studies into policies for academic integrity adopted by different UK institutions. A set of recommendations in this publication set out suggestions for developing workable and effective policies, including the associated change management processes.

An early prototype model of AIMM was presented for discussion to an international audience of researchers in academic integrity and plagiarism at a conference workshop in Brno, Czech Republic in June 2013. The concept was well received and participants made constructive contributions to developing the assessment categories and presentation methods.

When the AIMM model was being conceived and developed, the author was not aware of any available similar tools or products for this purpose. When a colleague presented a paper about the IPPHEAE project at the International Centre for Academic Integrity Conference, Florida in March 2014 (Foltynek and Glendinning 2014), he was approached by a team from the International Centre for Academic Integrity (ICAI) who had been developing a similar tool to AIMM called the Academic Integrity Rating Systems (AIRS). Their tool had been applied and evaluated in a few institutions in the USA (ICAI web site). This system “provides measurements to campuses to assess and rank their level of academic integrity institutionalization, both so they can compare themselves to other institutions and so they can benchmark their own progress and make plans for change” (ICAI AIRS p1).

AIRS assessment centres on a series of self-rated questions which produce a score and rating (Platinum, Gold, Silver and Bronze). The assessment categories for AIRS are:

- Policies and Procedures
- Academic Integrity Groups/Committees
- Academic Integrity Structural Resources
- Student Organization
- Education for Students
- Education for Academics/Faculty and administrative staff
- Communication to the general public
- Process Evaluation
- Data Collection

(ICAI AIRS p4-10)

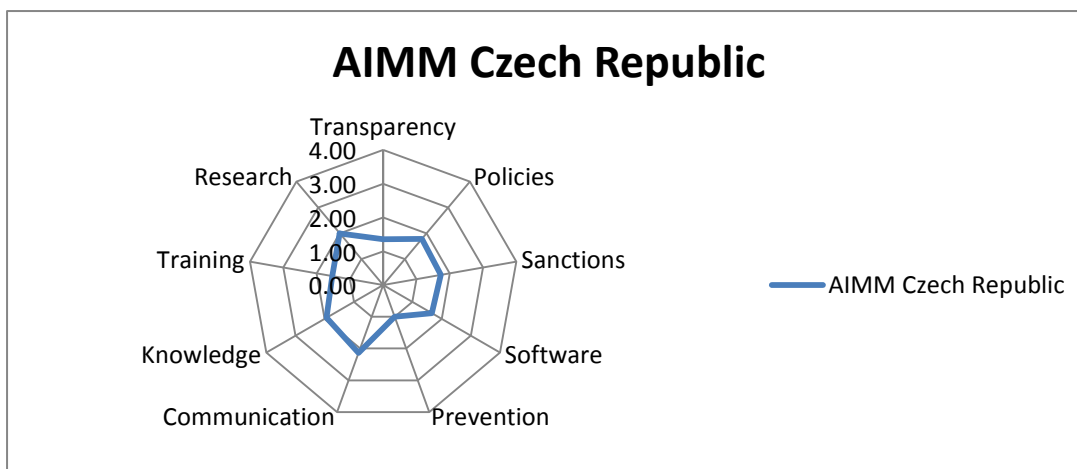
Interestingly, although organised and focused slightly differently, the independently derived nine AIMM categories incorporate similar areas of policy and processes as AIRS.

## **Methodology**

AIMM version 1 was created to compare and evaluate policies in EU countries based on the data collected at institutional and national levels for the IPPHEAE survey. Through a process of consultation with other researchers, with significant influence from relevant literature sources concerning policies for academic integrity identified earlier, nine criteria were identified on which the national evaluations would be based:

- Transparency in academic integrity and quality assurance
- Fair, effective and consistent policies for handling plagiarism and academic dishonesty
- Standardisation of sanctions for plagiarism and academic dishonesty
- Use of digital tools and language repositories
- Preventative strategies and measures
- Communication about policies and procedures
- Knowledge and understanding about academic integrity
- Training provision for students and teachers
- Research and innovation in academic integrity

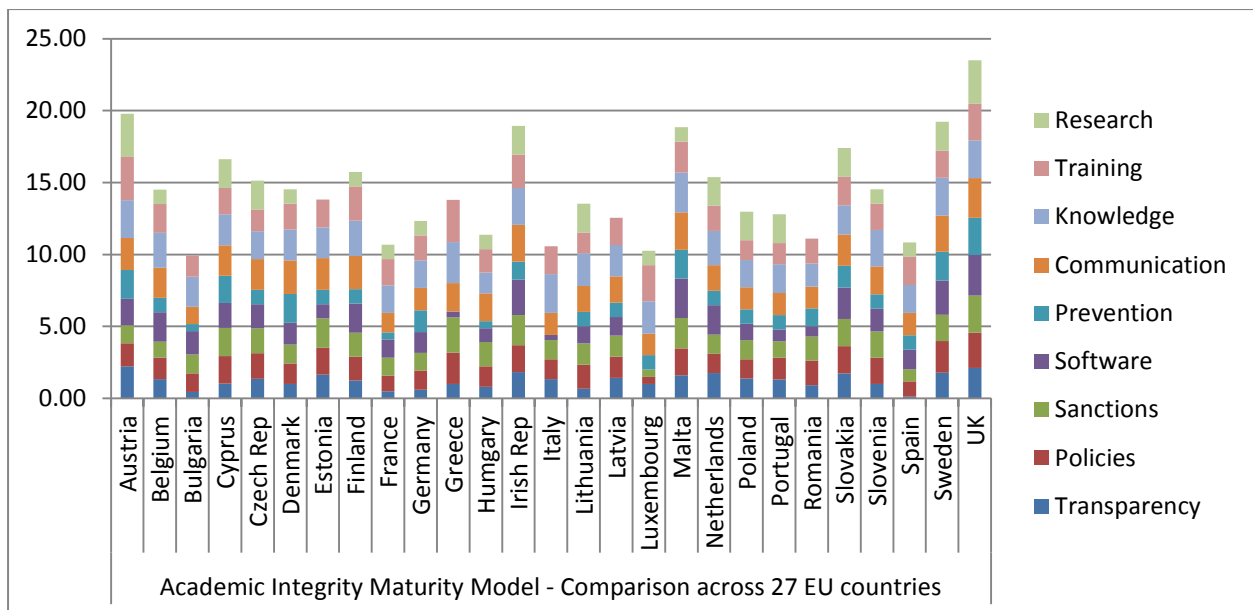
Both quantitative and qualitative data was used to derive the metrics that produced an AIMM country score for each category. Each metric, with components scores averaged across all responses, was put into the range 0-4 (low to high) to create a spider or radar chart for each country (Figure 2). The 9 metrics were then added together (equally weighted) to provide a maximum score of 36 overall for each country. The radar chart helped to highlight strengths and weaknesses. AIMM results for the 27 EU countries studied and an overarching comparison of scores for all countries were presented in the EU-wide report for IPPHEAE (Glendinning 2013). An example of AIMM results (Czech Republic) is shown in Figure 2 and the overall scores for 27 countries are shown in Figure 3.



**Figure 2: AIMM results for Czech Republic October 2013 (Glendinning 2013 p14)**

The metrics for AIMM were based on responses to the IPPHEAE survey questions, with 5000 anonymous responses from Higher Education students, teachers, managers and national representatives. The on-line surveys were made available in fourteen languages and pilot runs checked whether terminology used was consistent and meaningful to the different participants. Other sources such as documentary evidence, web-sites and blogs were also used to supplement the information in some categories.

The number and completeness of the responses varied significantly between countries, which impacts on the reliability of some results. Therefore although these results are not generalizable, they provide an indicative snapshot for discussion about what is happening in different countries and institutions across Europe.



**Figure 3: Comparison of Academic Integrity Maturity across 27 Countries (Glendinning 2013 p 37)**

Clearly further analysis is possible to compare maturity in different categories across the 27 countries, but this is beyond the scope of this paper.

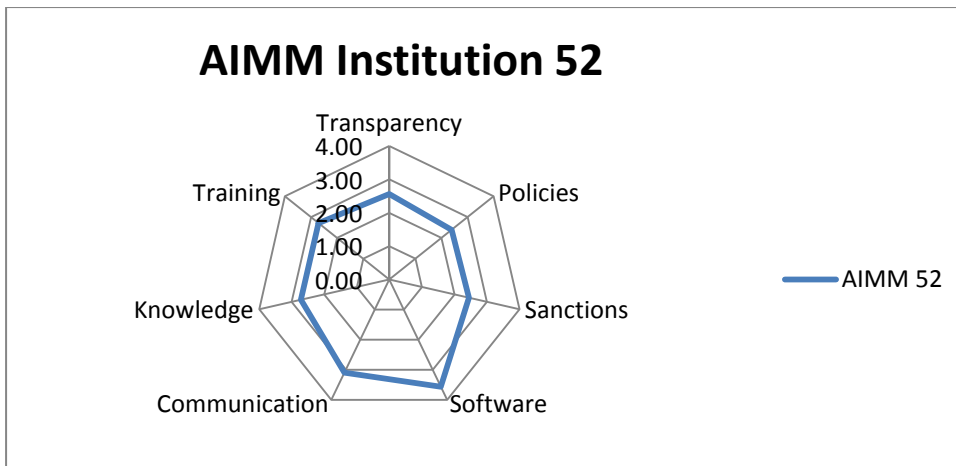
### Developing AIMM for evaluating institutional policies

As described, AIMM served a useful role for the IPPHEAE project, but even during the development of the tool it became clear that it would make sense to adapt the model to assess policies implemented within HE institutions. A tool and associated guidance for institutional use, whether used institution-wide or at departmental level, would be more targeted and precise than the assessments at national level. However as there was no time to pursue this idea until after the IPPHEAE project was finished, the author has developed this idea for this paper.

The IPPHEAE on-line questionnaire responses included substantial datasets from students and teachers for many EU HE institutions, which provided a readily available source of institutional profile data on which to test the tools. The data from five anonymous EU institutions was extracted and analysed, as far as possible applying the AIMM criteria to student and teacher data. This data produced the metrics and AIMM scores for seven of the nine AIMM categories. It was not possible to score the two remaining categories for *preventative strategies* and *research and innovation* because the AIMM scoring based the assessment of these categories on institutional senior management, which was not always available, and national interview data, which is not specific to an institution.

The five institutions are from four different EU countries and they were selected because responses were available from a sizeable cohort of students and some teachers. The results for each institution are presented and discussed in turn below.

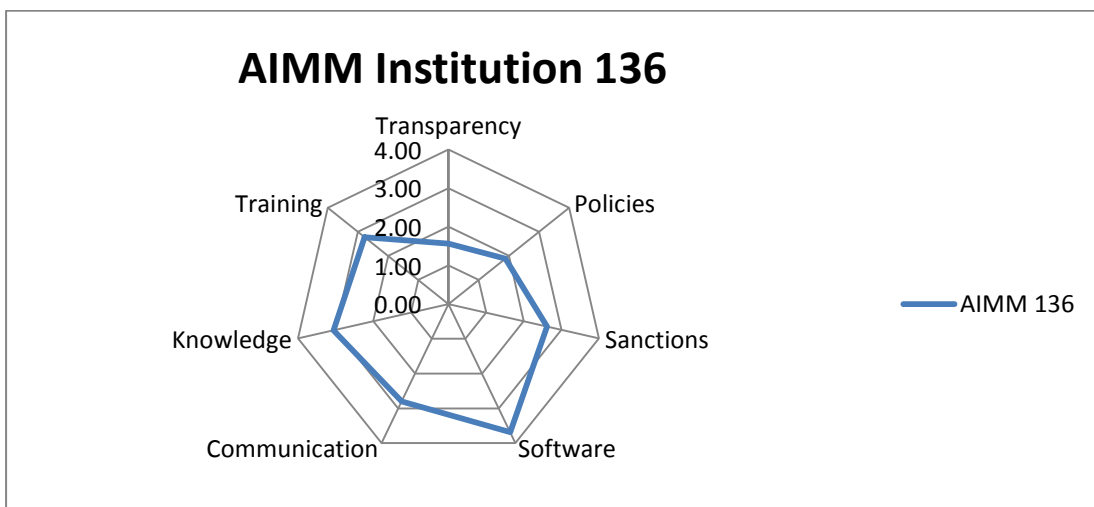
**Institution 52:** The profile for Institution 52 in figure was based on responses from 9 teachers and 169 students. The overall AIMM score was 19.48/28, with arithmetic mean score 2.78/4.



**Figure 4: AIMM Profile for Institution 52**

This institution appears to have no serious weaknesses and is very strong in the use of digital tools. The responses from students and teachers indicate that communication within the institution about academic integrity, skills and policies is good, but that more could be done to strengthen consistency of sanctions and application of policies.

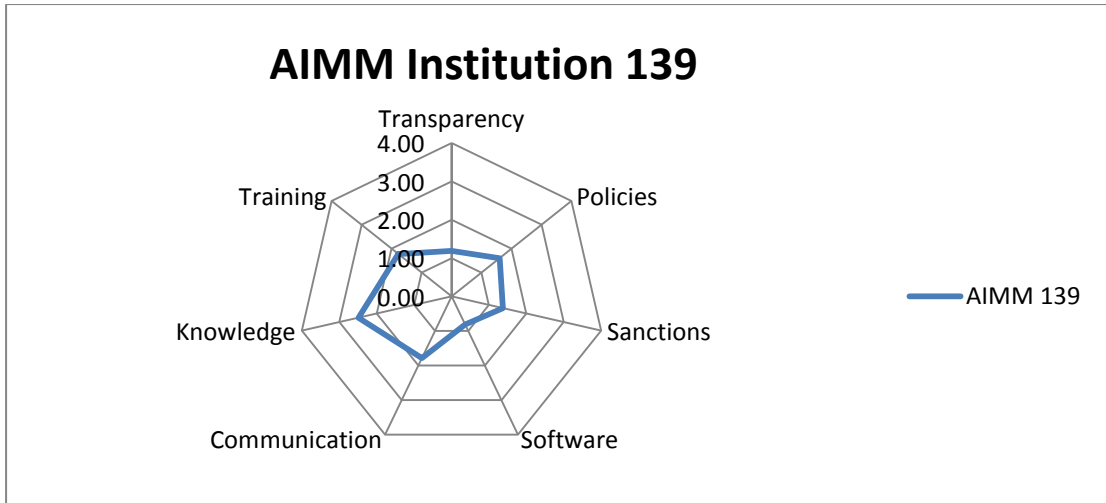
**Institution 136:** The profile for Institution 136 in Figure 5 was based on responses from 162 students and 18 teachers. The overall AIMM score was 18.39/28 with arithmetic mean of 2.63/4.



**Figure 5: AIMM profile for Institution 136**

The profile show exceptionally high score in the use of digital tools. This level of score reflects systematic use of the tools, awareness in the student population and applying the tools for educational purposes, not just checking for plagiarism. Institution knowledge and communication also scored well. However the analysis of responses suggests that this institution needs to work towards more consistency and transparency in policies and sanctions.

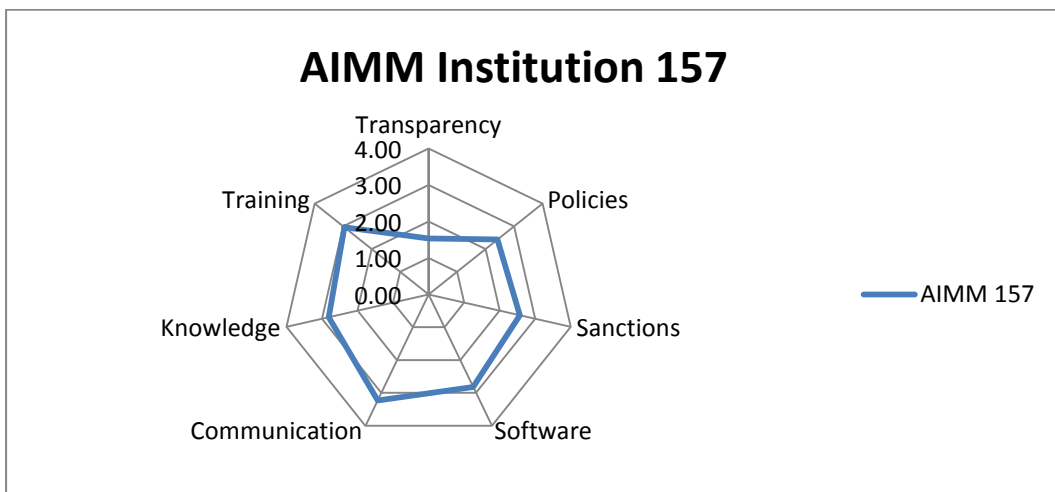
**Institution 139:** The profile for Institution 139 shown in Figure 6 was based on responses from 81 students and 27 teachers. The overall AIMM scope was 11.02/28 and the arithmetic mean score was 1.57.



**Figure 6: AIMM profile for Institution 139**

Although Institution 139 has no specific strengths in the categories being evaluated, the highest scoring category was the level of knowledge about plagiarism and academic integrity. However the low scores for all other categories suggest that the policies and sanctions are not consistently applied and there is very little evidence of transparency of process. Some training is available for students, but there is scope for much more support to be provided for students and teachers in the area of academic integrity and avoiding plagiarism. The lack of any strategy for using digital tools in this institution is behind the lowest scoring *Software* category. The acquisition of free or commercial tools, implemented together with a set of institutional policies for their use, would begin to address the current deficits and highlight in the learning community the need for more action in this area.

**Institution 157:** The profile for Institution 157 in Figure 7 was based on responses from 124 students and 15 teachers.



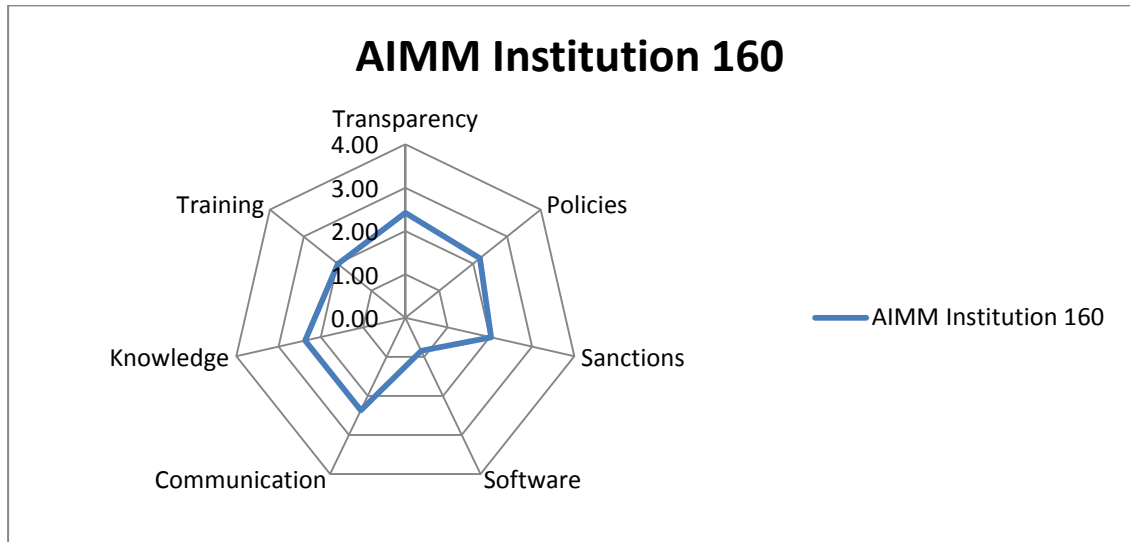
**Figure 7: AIMM profile for Institution 157**

The overall AIMM score for this institution is 18.32/28 and the arithmetic mean score is 2.62/4. This institution is strong in all categories except transparency, with particularly high scores for communication, training, knowledge and software. Feedback from student and teacher participants suggests that this institution has a great deal to be proud of in way they have developed strategies



and policies for managing plagiarism. The student knowledge about plagiarism is particularly encouraging. However without transparency of process, there is no way of knowing whether students accused of misconduct are subject to fair and equal processes and outcomes.

**Institution 160:** The profile for Institution 160 in Figure 8 is based on responses from 411 students and 24 teachers. The overall AIMM score was 14.23 and the arithmetic mean score was 2.03.



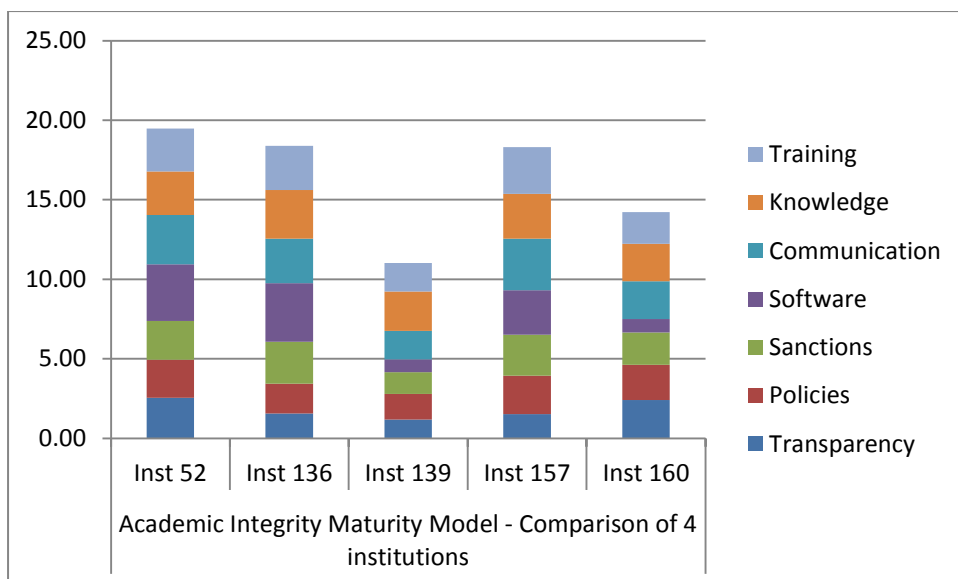
**Figure 8: AIMM profile, Institution 160**

There are no particular strengths for this institution, but the overall profile shows there are transparent processes and a reasonable degree of knowledge and communication about academic integrity within the institution. Scores for Institution 160 are very low on software and quite low on training. The institution does not use any digital tools for either matching student work to academic sources or for supporting training of students in academic writing. Although some training is offered for students, the institutional profile indicates that more could be done to support both teachers and students in raising awareness of plagiarism and developing academic writing skills.

### **Overall comparison of institutions**

Figure 9 compares the results for the institutions under evaluation. Institutions 136 and 157 are quite similar in overall profile, but the scoring in specific categories helps to pinpoint different areas in each where more development is needed. Even institution 52 showing the most mature processes has some scope for improvement in all areas.

The absence of digital aids to support the detection of plagiarism in institutions 139 and 160 had a marked impact on their institutional scores, but this aspect may have affected other categories, such as training and policies, because introducing any new tools normally drives a review of strategy and revision of policies and systems.



**Figure 9: Comparison of the AIMM institutional profiles**

## Discussion

This exercise demonstrates that it is possible to extract useful information about an institution's academic integrity policies using the AIMM tool and the existing IPPHEAE dataset. However it was not possible to evaluate all nine categories using the current data.

The profiles generated demonstrate distinct strengths and weaknesses for each institution. Further development of the tools needs to incorporate guidance notes to help with interpretation and suggest strategic actions that should be taken to improve maturity.

As the IPPHEAE data was collected over more than a two-year time-frame during 2011-2013, it can be assumed to be reasonably current, but the earlier responses may be slightly out of date if institutional policies have changed during that time.

Participation by institutions and responses from individual students and teachers were all voluntary and the questionnaires were quite long and complicated. It is accepted that the respondents who successfully completed the questionnaire were most likely to be people with interest in this topic and from institutions where the subject is taken seriously. This factor suggests the data is likely to have a positive bias with institutional processes more mature than they would be for that country as a whole.

The low volume of responses at institutional management level on the IPPHEAE survey drove the decision to base these pilot analyses on just student and teacher data. This omission meant that two important categories, prevention strategies and institutional support for research into plagiarism and academic integrity, were not included on the institutional profiles. Any future development should include ways of capturing this information.

## Future development

At the time of writing this paper, the institutional profiles generated have not yet been shared with contacts at the unnamed institutions. However there are plans to have such discussions before the June 2014 conference. This exercise will help to verify accuracy of findings and highlight possible deficiencies in the data or the AIMM process.

Although AIMM has to date used the IPPHEAE datasets on which to base evaluation of policies at both national and institutional levels, the tool would be much more accessible if it was available via a web-based platform and provided access for institutional self-assessment. Further work is needed to establish ways to achieve this, preferably while retaining the benefits of capturing three or four levels of input: teachers, students, institutional managers and nationally active representatives, agents and researchers.

Discussions with the USA team developing the Academic Integrity Rating System (AIRS) will try to build on the strengths and good ideas from both systems. There may be a need to optimise on language and concepts to fit local needs and constraints of different countries. The major differences between the current status of AIRS and AIMM are tabulated in Figure 10.

Factor	AIRS	AIMM
Concept	Rating and benchmarking	Maturity of process
Respondents	Based on an individual's responses to a series of questions about institutional policies	Currently draws on questionnaire data from student and teacher respondents
Scoring	Self-scoring with scores very transparent to the respondents	Based on a complex formula, averaging responses to a number of questions
Criteria	Ten categories	Nine categories/piloted as 7 categories
Rating	The rating is Bronze, Silver, Gold or Platinum, based on numeric value	The rating is a real number between 0 and 4
Institutional results	Numerical score for each category	Radar or spider chart, depicting overall score for each category
Benchmarking, comparison	Scores and ratings	Stacked bar chart
Feedback, Guidance	Detailed notes available against each category and sub-categories	Not yet developed
Administration	Plans to develop web-site	Plans to develop web-site
Funding	Self-funded	Funding applied for via Erasmus + 2014

**Figure 10: Comparison between AIRS and AIMM**

The author has recently submitted a project proposal under the European Commission's Erasmus+ initiative, for a follow-on project to IPPHEAE called Plagiarism Outreach (PlagOut) that includes funding to develop AIMM for institutional use. If successful this project will commence in September 2014.

## Conclusions

Considerable interest has been expressed in AIMM already by researchers in academic integrity who have read publications or contributed in different ways to the IPPHEAE research. Further research

and development it needed to create a usable and accessible toolset and related resources to allow institutions to assess the effectiveness and maturity their policies and systems.

It is encouraging to find that another team has independently identified the need for such a resource and has started to develop a toolset with very similar characteristics to AIMM. Planned discussions are imminent between the author and members of the USA team to establish whether it is possible to combine forces in order to create a universal toolset. It is anticipated that the 6<sup>th</sup> Plagiarism conference will provide the ideal forum for capturing feedback from interested participants about AIMM and AIRS.

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